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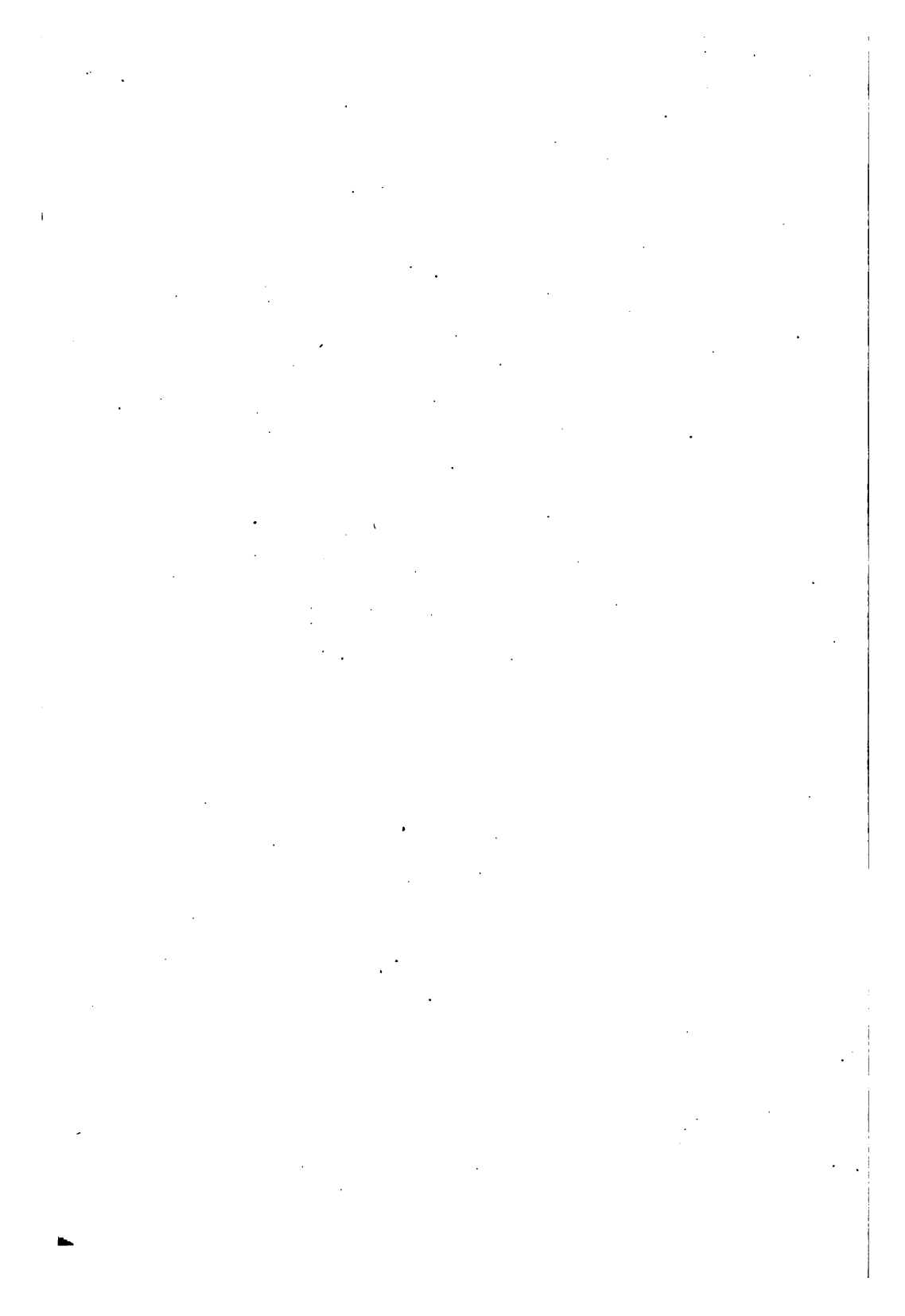
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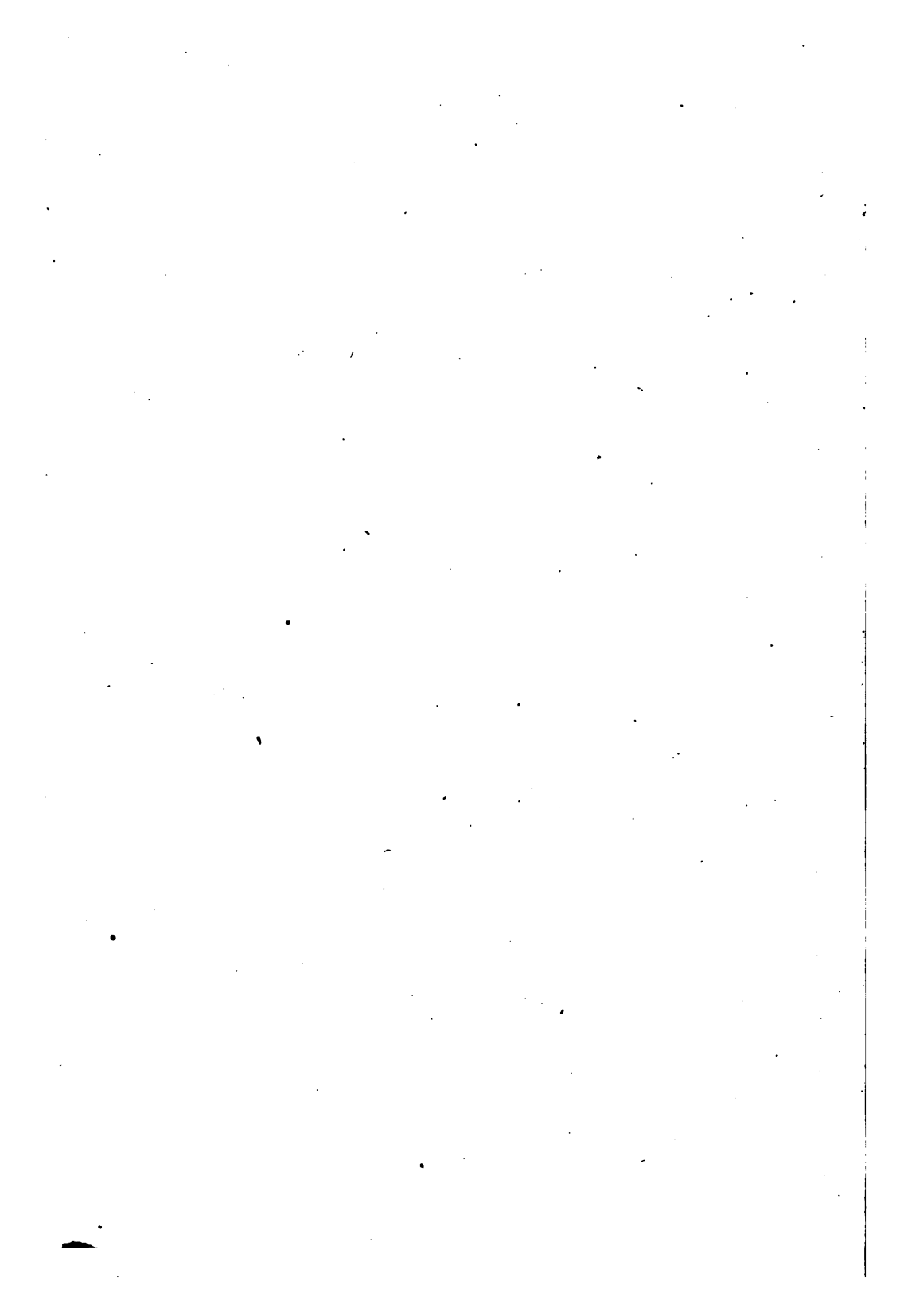
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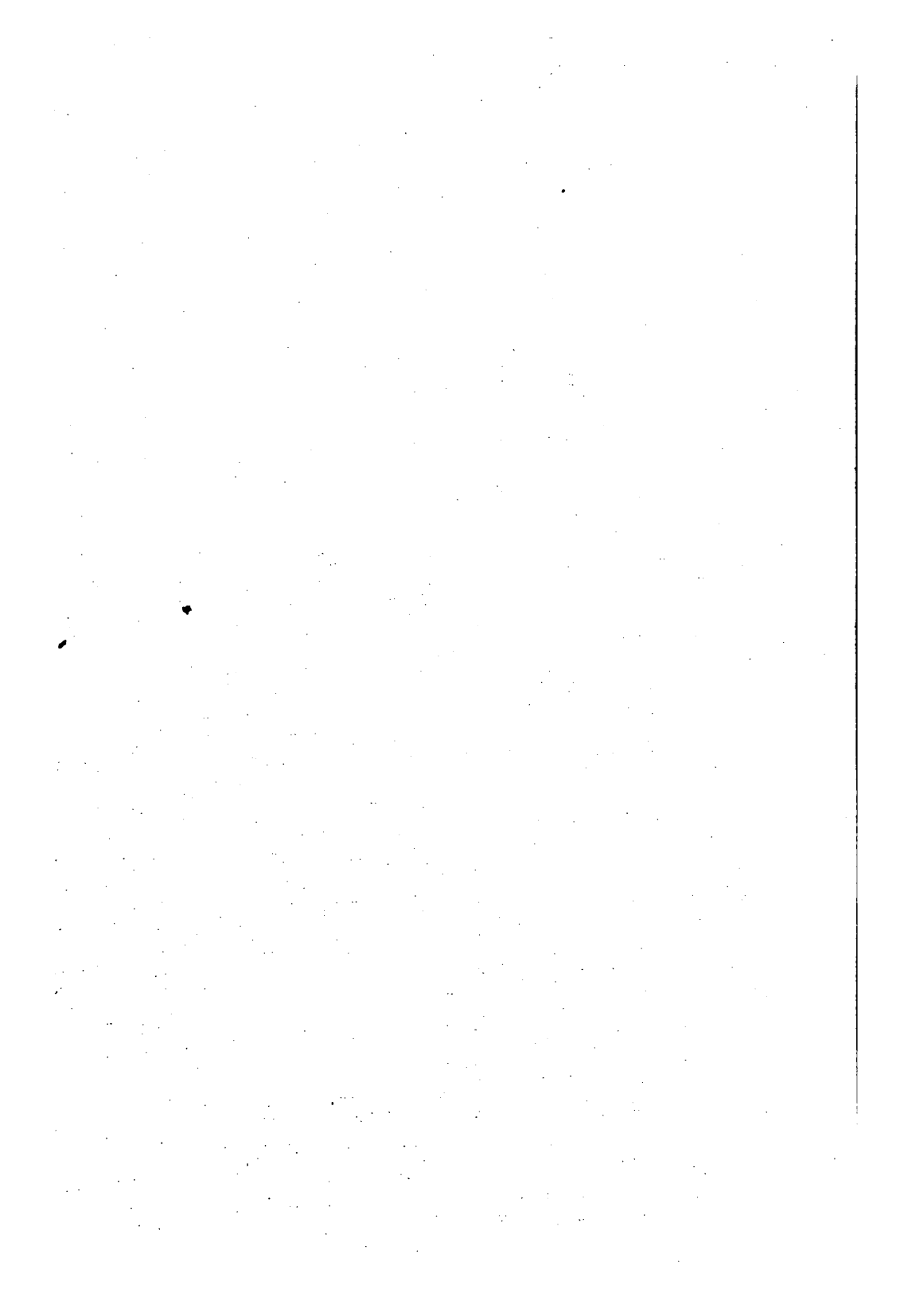
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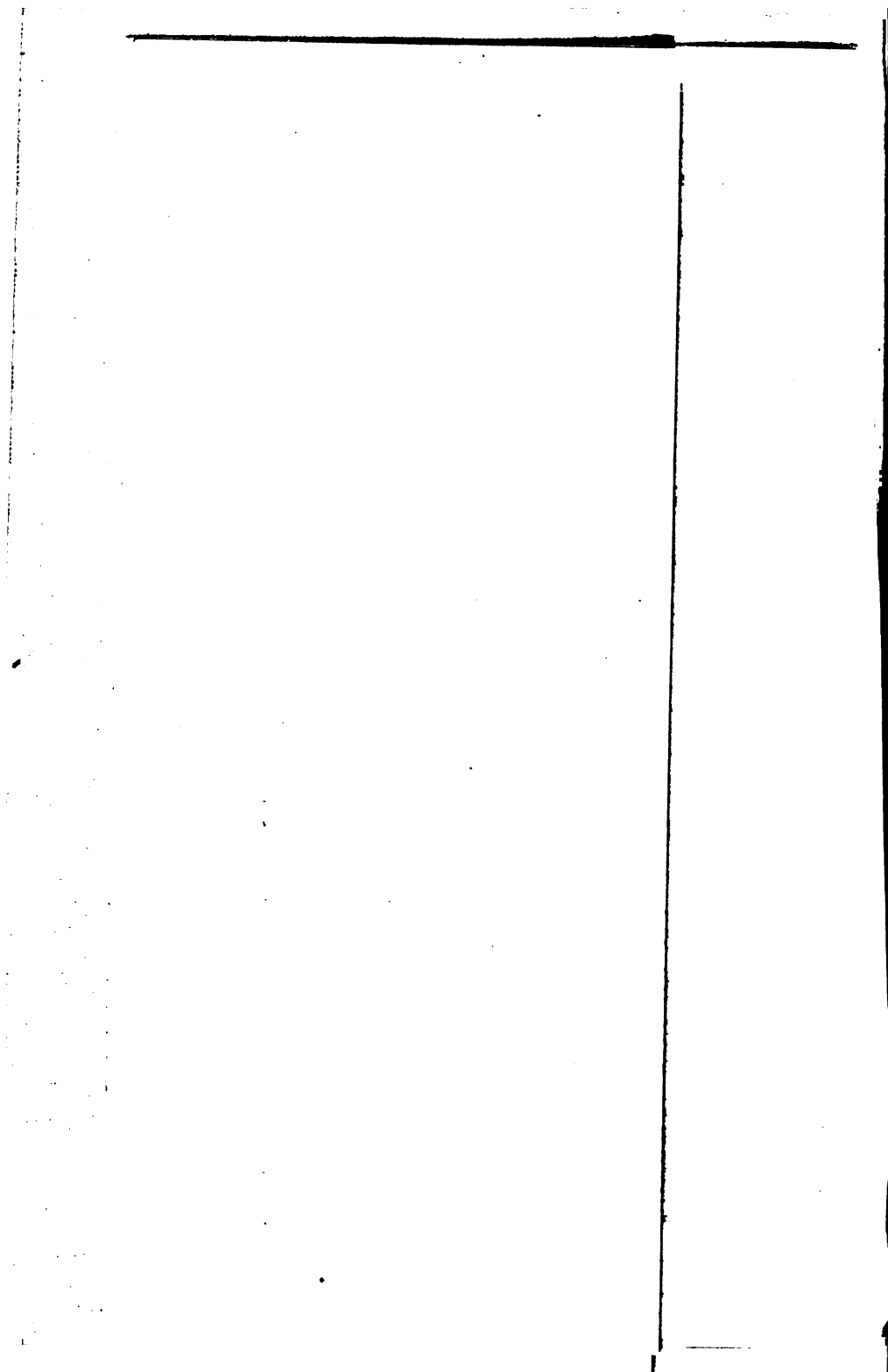
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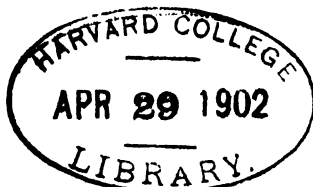
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*Bureau of the American
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BUREAU OF THE AMERICAN REPUBLICS,
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Director.—CLINTON FURBISH.

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By official notification to the United States Department of State in April, 1892, the Dominican Republic became a party to the support of the Bureau of American Republics.

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Chapter I.

GEOGRAPHY — GEOLOGICAL CONDITIONS — METEOROLOGICAL PECULIARITIES—FLUVIAL SYSTEM—ANIMAL AND VEGETABLE KINGDOMS—PHENOMENA OF THE COAST DESERT.

The traveler from New York to the capital of Peru, will be interested in observing that in the entire voyage of about 3,200 miles he has little occasion to change his watch after the meridian observation of each day on shipboard. And when at last he reaches Lima he is barely 150 miles 10 minutes west of his starting point. When his steamer has rounded Sandy Hook, on the outward passage, her course will be due south to the east end of Cuba, 1,200 miles distant, and so close to the island that he can see the light keeper and his family on the sands watching the big ship go by. On the port hand, 50 miles away, a clear day reveals on the horizon the peaks of Haiti; then the steamer changes her course to south by west, and in a run of 600 miles crosses the Caribbean Sea to Colon. This is not an agreeable part of the trip. A following wind, the northeast trade, blows only at about the ship's rate, and the perspiring passenger feels himself in a calm of the tropics, while on the clear reach of 600 miles the sea has been piling up behind him with constantly increasing swell, so that when he has landed on the mole at Colon he is glad to have left the pitching thing, with its scorching atmosphere; the wind has shown itself in the white caps of the ocean, but has blown him no breath of comfort.

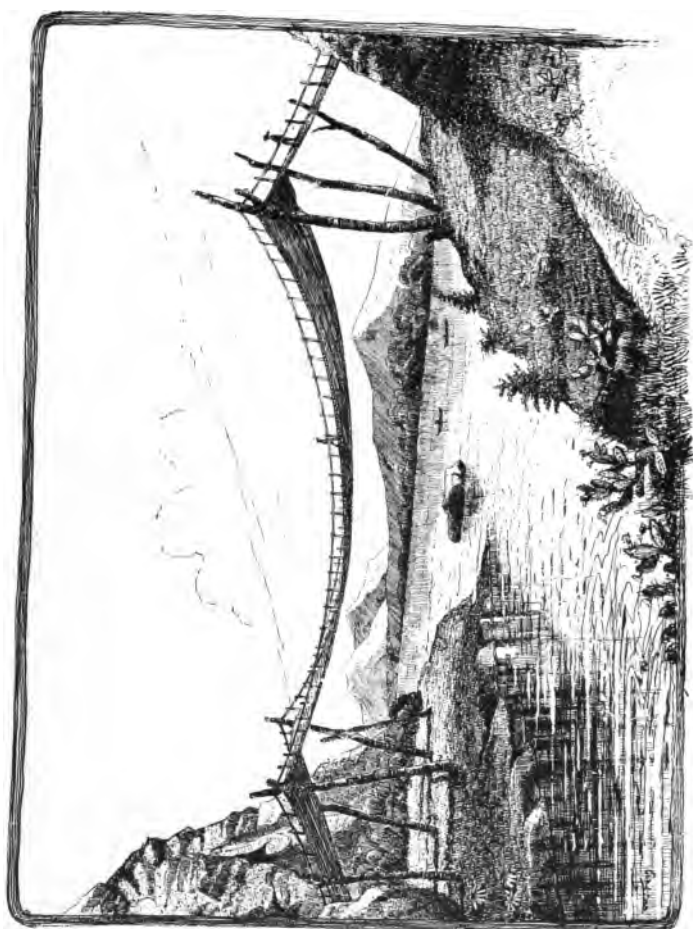
Now, in a railroad ride of 50 miles he has crossed the Isthmus of Panama and enters the South Pacific Ocean. From this point

his course will be almost exactly that of Pizarro in 1531 to the northern ports of Peru and nearly due south from Panama. After a run of just about 1,000 miles he will enter the Guayaquil River of Ecuador, and in a few hours later the river of Tumbez, on the northern edge of Peru. Thus far he has seen cliffs and mountains adorned with the foliage of tropical forests and the verdure of grassy plains, but when he leaves the Tumbez to go south he loses all that, for he enters the Zona Seca. This "dry zone" extends the whole length of the Peruvian coast. Here and there, when passing the valleys that open to the ocean, he discovers the forests of algarobos, plantations of sugar cane, or bright fields of maize and alfalfa; a brilliant verdure almost impossible of existence among the bleak, unpromising cliffs and arid deserts.

The first considerable port of Peru is Paita. You pass Cape Blanco and round Pariña, the westerly point of the South American continent, and enter one of the most perfect harbors in the world for safety and good anchorage. As the steamers now run you will have taken fourteen days to get there from New York. But the distance, less than 2,900 miles, should be a delightful trip, with its pleasant diversion of a railroad in the midst, of not more than six or seven days. It is not as far to Lima from New York as to San Francisco, across the continent. From Paita it is less than 500 miles, which occupy two days' time under the present schedules.*

From Cape Blanco the trend of the shore is southeast in its whole extent to the limit of Chile, where the coast suddenly turns due south and keeps that course to Cape Horn. In the north the territory extends eastward 700 miles to the Amazon River, while

*The cost of a passage to Peru is by no means constant, varying with the degree of competition between lines. Generally, \$205 will cover the fare to Paita, and \$216 to Callao, the port of Lima, of which \$100 must be reckoned as fare between New York or San Francisco and Panama. In January, 1893, the fare to Callao was only \$97, but this was exceptional.



COWHIDE BRIDGE.

at the confines in the south the Republic is barely 100 miles wide. Measured on a meridian, from $3^{\circ} 30'$ to 18° south latitude, Peru is about 900 miles long, but the shore line embraces nearly 2,000 miles. The extreme western point, Pariña, is in longitude $81^{\circ} 20'$ west from Greenwich, while the southern extremity of its coast is $71^{\circ} 20'$. Being 900 miles long, with an area of 464,000 square miles, its width, extremely irregular, averages 500 miles. Proceeding eastward across the cordillera of the Andes, we find four habitable zones, separated by the loftiest mountains of the hemisphere, of which three distinct ranges traverse the whole length of the Republic, giving it the singular fan-shape it possesses. The accompanying profile is so clear a diagram of the grand topographical features of the territory that no difficulty will be felt in understanding the references hereafter made to the different natural divisions.

Peru is bounded on the north by Ecuador, from which it is separated along 500 miles of the border by the Amazon River; on the east by Brazil and Bolivia; on the south by Chile, and on the west by the Pacific Ocean.

Fluvial system.—The rainless coast desert of Peru is traversed by 50 rivers, only one of which is navigable—the Chira, in the north. Generally, these streams are raging torrents for a part of the year, following the mountain rains of February and March; after that their waters sink away, entirely disappearing by June in the sands. The Piura, in the north, is a navigable stream from the season of February floods till the end of June, during which time it contains from 3 to 15 feet of water, allowing the transportation of freight as far as Piura, a distance of 100 miles.

The coast of Peru is indented with a few bays, forming well-protected harbors, but the anchorage of the greater extent of the coast commerce must be in open roadsteads, made possible by the immunity of all the Zona Seca from storms. The bays of Paíta, Sechura, Chimbote, Samanco, Callao, and Norato afford excellent

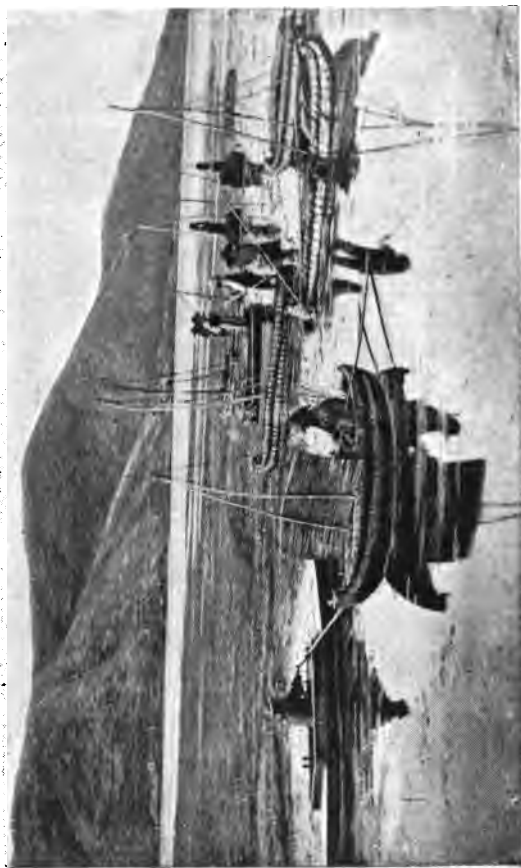
shelter, with good bottoms, but, with the exception of Paita and Callao, are as yet but little used by navigators. All passengers and cargo, whether in bay or roadstead, are moved between the shore and ship in launches of 50 to 100 tons capacity, except in Callao, where there are fine moles for the purpose.

Rivers flowing into the Pacific generally rise in the sierra between the coast and central Andean ranges. They are the Tumbes, Chira, Piura, Santa, Rimac, and nearly fifty smaller streams, which are the reliance of the agriculture of the coast desert. Those rising in the puna, east of the central cordillera, are all tributaries, more or less remote, of the Amazon. But the ultimate head of that great river rises in the sierra, in 11° south latitude, having its source in the little lake Lauri-Cocha and flowing northwest nearly parallel with the Pacific coast. It drains the western slope of the central range to 5° south latitude, where it turns abruptly to the east, and after a course of 4,000 miles, reaches the Atlantic. The affluents of the Amazon (also called the Marañon) constitute a vast system of inland navigation in the forest region of Peru. They are the Perené, Ucayáli, Huallaga, Paucartambo, and Madera.

With the exception of the coast desert, all the territory of Peru has its annual rainy season; but no part of the Republic is so well watered as the forest zone, known in the language of the country as the "montaña."

In the sierra the tiny lake Cono-Cocha is the source of the Rio Santa; while also in the sierra, between the coast and central range, is the lake Chinchay-Cono, 7 miles wide and 37 long, from the northern edge of which rises the famous Cerro de Pasco. From the Chinchay-Cocha, more than 10,000 feet above the level of the sea, the Rio Jauja runs southward through a populous valley over 150 miles, and then, breaking through the cordillera, becomes an affluent of the Ucayáli.

The most famous lake of South America, and, indeed, of the world, being at the greatest elevation of any water the subject of



BALSAS ON LAKE TITICACA.

commerce, is the lake Títicaca, 120 miles long and 60 wide, lying in a basin of the puna, 300 miles long and 100 wide, at an elevation of 12,545 feet above the level of the ocean, from which it is 150 miles distant. At this time its waters are navigated by three steel steamboats, engaged in traffic between its ports, some of which are in the territory of Bolivia. A stage line from La Paz, the Bolivian capital, delivers mail and passengers to these steamers, by which they are taken to Puno, the terminus of a railroad that transports them to the Pacific coast at Mollendo, where they may take steamer to any corner of the world.

The rivers of the montaña are navigable to a distance of 3,000 or 4,000 miles from the Atlantic at Pará, in northern Brazil. The head of navigation on the Rio Perené is 1,000 feet above sea level and 3,000 miles from the ocean, and is to be connected with the capital by a continuation of the Oroya line of railroad, known now as the "Central of Peru."

Geology.—While the peaks of the Andes rise to a height of more than 22,000 feet, there is no active volcano in all the territory. Occasionally vapor is seen to rise from Illimani and two or three other magnificent snow-capped summits, but there is no irruption. Illimani, Illampu, Misti, and Yunguay are all extinct, but their indescribable beauty, rising with silvery luster in solemn majesty above the grandest of their Andean neighbors, stills the beholder to silent awe. The snow line of Peru is from 16,000 to 17,000 feet, according to the latitude.

The formation of the Andes is due to several causes operating at distinct intervals of time. They consist of stratified material which has been more or less altered. This material was deposited at the bottom of a sea, so that at some former time the highest portions were submerged, probably in consequence, to a certain extent, of the subsidence of the sea bottom. Since the latest deposits there have been upheaval and denudation. The range has resulted from the accumulation of sediment on a subsiding

area, from the subsequent upheaval of such deposits, which have been increased in height by the ejection of volcanic products, and from the operation of denuding agents. As far as our present knowledge goes, it appears probable that the Andes mark an area on which sedimentary deposits have been accumulated to a greater extent than on other portions of South America. It is further demonstrable that these deposits belong to several geological eras, the elevation having occurred at different periods, while their axes extend in different directions.

The general disposition of the rocks is as follows: The oldest, which are pre-silurian, possibly laurentian, form the outermost rim of the continent, of which the northeast and southeast corners have probably been swept away. These corners correspond with the mouths of the Orinoco, the Amazon, and the Plata rivers. Within this basin and following close upon these old rocks are schists and quartzites, which are in all probability of silurian age. These enter largely into the transverse ranges by which the central hollow is divided into three basins. Within this again are sandstones and limestones, usually referred to the carboniferous period, which also form part of the transverse ridges. A band of rocks of secondary age follow, some of which are believed to be triassic, while others are identified as cretaceous. Tertiary beds, some of miocene date, together with post-tertiary beds, cover the largest part of the areas of the great river basins and the hollows in the mountain ranges, and also occur on the seaward flanks of the principal chains. The high ranges are granitic, flanked on either side by gneiss and quartzite. Carboniferous stratas, with seams and pockets of coal, occur in the coast range and the high plains of the sierra. In the desert of Atacama and far away to the north there is a considerable development of red sandstone. After their deposition, and prior to that of the marls, syenitic rocks were introduced, causing the sandstones and schists to be converted into porphyries. This eruption was accompanied

by and probably connected with the formation of auriferous veins, the elevation of the strata, and the faulting of the veins. The next period represented by strata is characterized by saliferous and gypseous marls, which rest unconformably on the rocks beneath. On the west side of the continent the pumiceous conglomerate is formed from the trachytes, when the upheaval of the principal chain of the Andes occurred. This elevation did not materially change the extent of land west of the Andes, except to add to it a strip some 30 miles in width. Farther east the change was great, since the larger portion of the great central chain then emerged. The eruption of the trachytes was accompanied by a metamorphism distinct in character from those of earlier ages. The rocks were then subjected not only to heat and water, but also to acid vapors, which changed the feldspar into sulphates of alumina and iron, salt into anhydrous sulphate of soda, and, probably by freeing the chlorine and iodine, originated the chlorides and iodides, which are so abundant in the argentiferous veins. Since the drift there has been a slight elevation along a meridional axis.

As a result of these geological changes it transpires that Peru is the richest territory of earth in its mineral deposits. The coast is rich in petroleum, silver, gold, copper, coal, sulphur, salt, nitrate, lime (carbonate and gypsum), magnesia, and borax. The sierra is undoubtedly the region of greatest wealth in minerals and precious metals; for there are found in the greatest abundance, and of large range, silver, gold, copper, lead, cobalt, cinnabar, antimony, coal, salt, iron, nickel, marble, arsenic, sulphur, alum, and petroleum. In the montaña gold washings and gold mining are the special features; there also are found emeralds, rubies, turquoises, and diamonds, the jewels with which the Incas adorned their persons.

Meteorology.—All climates on the face of the earth, with all their results, are illustrated in the climates of Peru, the modifying influ-

ences being 15° of latitude and the differences in elevation above the sea; the coast desert, rising gently above the shore line to the foothills; the sierra, 4,000 to 9,000 feet higher; the puna, between the central and eastern cordillera, at an altitude above ocean level of 10,000 to 14,000 feet, and then the montaña, sloping off to the east from an elevation of 10,000 feet at the foot of the cordillera to only 1,000 at the falls of the Perené.

A superficial observer will be tempted to ask why no rain falls in the Zona Seca, where there is a sea breeze all day long. It is not difficult to explain. The trade winds, blowing from the east over the Andes, leave in those hills the moisture they have brought from the Atlantic Ocean, the montaña getting the first and most abundant supply. The clouds continue their flight before the wind, leaving the greater part of their remaining rain in the puna, while, nearly exhausted, they pass over the sierra, which is only partially blessed with showers and barely escapes the condition of the desert. When at last the air has reached the coast desert the last drop of moisture has been wrung from it in the condensations of the coast range. It now blows over the dry desert plain and so on out to sea across the Pacific Ocean. But the sunshine of the day has heated the desert and rarefied the atmosphere, and to fill this partial vacuum air rushes in from the ocean, which is cooler than the plain. But this influence extends only from 50 to 100 miles off the shore, and the small area of vaporization, while furnishing soft temper to the wind, which has been refrigerated in the snows of the mountains, is not sufficient to furnish rain in the pampas, even if it ascended considerably higher than it does. When, however, it reaches the coast range it is condensed, and furnishes that range and a part of the great plain of the sierra with its waters, assisting thus to supply those streams that head in that zone.

The result of these conditions may thus be recognized. The montaña is a tropical forest in which the density of growth

depends somewhat on the altitude above sea level, running from open timber land in the upper districts to jungle in the lower. All the montaña is an excellent region for planting, without the necessity of irrigation, once it is cleared. The puna is too high and cold for any dense vegetation. It is a dreary region, with cheerless atmosphere and leaden skies, giving sustenance to man only in return for severe labor, but not demanding irrigation. The sierra, on the contrary, possesses a charming climate, but demands some irrigation, for which it makes an excellent return. The coast desert yields no crop without irrigation, unless we except the seasons in which the floods have saturated the river banks, which are then the most productive lands in the country. The region is visited by erratic clouds in years of excessive abundance of rain in the cordillera, and then deliver upon the thirsty plain from 3 to 5 inches of water in as many showers, extending over a season of two months, from the middle of February to the middle of April.

The only part of Peru in which a full tropical climate exists comprises the eastern district of the montaña. In the deserts of the north, although near the equator, the temperature varies from 70° to 77° F. In the towns as high as 85° has been noted at 3 p. m. The relative humidity in the same region has been as low as 45 per cent, but the average for the year is 63 per cent, while it frequently reaches 75 per cent. The sea breeze in the desert is delicious, beginning at a rate of about 12 kilometers an hour and freshening to 20 at 7 in the evening, and sometimes to 32. These elements of climatology give abundant reason for the amount of ozone in the atmosphere, which measured on Schonbein's register, of which the maximum is 10, from 3½ to 7 in the year in which continuous observations were made.

The climate of the sierra and the higher regions of the montaña is agreeable to the habitué of the temperate zone. In the city of Lima, the capital of the Republic, the mercury sometimes

goes down to 40° F. in the midwinter month of July, although it is but 13 degrees from the equator; and it sometimes rises to 90° in January, but the heat is accompanied with such pleasant winds from the sea that no inconvenience is felt in the hottest day of the season. The *garua* of winter is the most disagreeable feature of the Lima climate. While not amounting to rain, it creates a raw, cold atmosphere that penetrates to the marrow and makes an overcoat a comfortable garment. Some of the newer houses are being provided with fireplaces, in spite of the prejudice of the old Spaniard against "fuego artificial," who sees with surprise that there are whole nations who indulge in such a luxury and still live.

Earthquakes have never been destructive in the north of Peru, along the coast. Indeed, they are scarcely known there except as ripples of a distant wave. In 1868 Arequipa was badly damaged by one, which would have passed without great harm but for the unfortunate style of building, a monument of Spanish domination. These houses were of stone, the roofs of which being arched were easily tumbled about the heads of the residents, when the lighter structures of the present day would have remained unharmed. Sub-oceanic irruptions have been the most disastrous to the country in modern times, having twice within a few years wiped out the maritime city of Arica and destroyed much valuable property along the southern coast.

Animal and vegetable kingdoms.—The "fauna Peruviana," as catalogued by the English naturalist William Mason, in 1881, contained 40,000 different specimens, including many birds of passage. The waters of the Pacific coast teem with excellent fish, of which the corbina, not known in the northern temperate zone, weighs from 6 to 10 pounds, and is of rare delicacy; skate, sole, plaice, haddock, cod, flounders, smelts, and Spanish mackerel abound in the sea, while in the streams are found shrimps and prawns, these latter of enormous size, weighing not unfrequently

a pound, and of excellent flavor. Lobsters are taken in the bays wherever the shores are rocky.

The desert of the coast affords life to the iguana, a large lizard, and numerous smaller ones; also to foxes, hares, and rabbits; while in the valleys along the water courses are found deer and wild hogs. The domestic animals are such as are found the world over—the horse, donkey, mule, dog, goat, sheep, cat, and horned cattle. In the desert are condors and vultures (turkey buzzard), owls, and bats; also in the lower valleys the vampire bat. Game birds abound—the partridge, pigeons, parrots, and cuaresmeros (a kind of ruff). The singing birds are numerous and of beautiful plumage. In the valley of the Chira is a superb oriole—the chiroca—named from its habitation in that valley; a fine nightingale, called the rui señor, paroquets, and a variety of song birds that fill the air with song and beauty. Domestic poultry is abundant—turkeys, fowls, ducks, and geese. The more common sea birds which haunt the islets and headlands in countless myriads, are the *Sula variegata*, or guano bird, a large gull, *Larus modestus*, the *Pelicanus thuyus* and the *Sterna inca*, a beautiful tern, with curved white feathers on each side of the head. The rarest of all the gulls is also found on the Peruvian coast, namely, the *Zema furcatum*. The immense flocks of birds, as they fly along the coast or rise in a body from the islands when disturbed by a passing steamer, appear like clouds. Sea lions (*Otaria fosteri*) are common on the rocky islands and promontories. These great animals have favorite retiring places, where they go to breathe their last, the aged and wounded being helped there by their companions.

In the sierra and puna there are the tiger, bear, wolf, panther, jaguar and many other wild beasts; condors and other birds of prey. Of wool-bearing animals in the same region are the vicuña, huañáco, llama, and alpaca, with sheep and the other domestic animals and horned cattle of the world. Domestic fowls are found here, as in every other part of the country.

In addition to the animals above named, all of which are found in the montaña, are also the nutria, chinchilla, and other fur-bearing animals; among birds are wild turkeys, ducks, pigeons, birds of paradise, macaws, parrots of infinite variety, and a multitude of humming birds, with game birds unknown in Europe or the United States. Alligators and many reptiles are there, while the rivers are alive with myriads of fishes of every variety that finds a home in fresh water.

Of the vegetable kingdom nature has made generous allotment to Peru. From there first came the potato, which to-day is so important an article of food to a large part of the civilized world. In its wild state it is a little bulb no bigger than a hazel nut, but under the Incas it was cultivated to be as fine as the best system of modern gardening has made it.

The valleys and irrigated lands of the coast desert produce sugar cane, rice, cotton, tobacco, coffee, cacao (for chocolate), castor-oil bean, maize, grapes, alfalfa, capsicum, gums, sarsaparilla, coca (the base of cocaine), olives, tamarinds, potatoes, sweet potatoes, peas, and beans, tropical fruits and vegetables for the table; also the yuca, a tubercle substitute for the potato and useful in the manufacture of starch.

In the sierra all the products of the temperate zone and many of the torrid zone are raised; but its great staples are the potato, wheat, barley, oats, alfalfa, and maize. The latter grows everywhere and in many places yields two crops a year. It is not only a staple of life to all classes, but serves to make the national beverage, chicha. Here also are found in healthy growth yuca, ramie, tobacco, coffee, cacao, cinchona, sugar cane, castor-oil bean, and a variety of fruits, grains, and medicinal plants.

On the cold, bleak puna but few crops grow, although this was the seat of Inca power and civilization. Here is the ichu, on which the indigenous wool-bearing animals of the region feed; barley, oats, quinia, olluca, yuca, and other indigenous roots which the people use for food and medicinal purposes.

The transandean region or montaña is a virgin forest. There are in the tract some towns and also detached plantations. Nature is here exuberant, and everything is produced that is found in the rich valleys of the coast. Here in luxuriance grow tobacco, sugar cane, rubber, cotton, coffee, cocoa, vanilla, sarsaparilla, copaiba, the vine, oranges and many other fruits, herbs, and plants, both medicinal and oleaginous, timber and woods of every variety; here the rivers are navigable, and on the banks are found the richest gold washings, the diamond, emerald, and ruby.

Probably the highest inhabited places in the world are in the mountains of Peru. There is a community of about 200 souls living at Galera, on the line of the Central Railroad, at an elevation of 15,565 feet above the level of the sea; also at Vicharayac, 15,950 feet, and Muscapata, 16,158 feet above the ocean, are mining camps sustaining each about 200 miners. Recent surveys by the engineers of the Inter-American Railroad project give the following heights above sea level for the following named towns: Cerro de Pasco, 14,293; Huancayo, 10,635; Ayacucho, 8,900; Jauja, 11,145; Abancay, 7,853; Cuzco, 11,003.

Phenomena of the coast desert.—The traveler who follows the course of Pizarro in the steamers of the Pacific wonders when he enters the Bay of Paita whence came the fruits and flowers brought as presents by the aborigines to the vessels of the discoverer. Before him and all around the bay rise the naked walls of the Barranca, 300 feet above the beach, from base to summit as bald as any rock, a brown grey sand, utterly unpromising. Going up to the plain above, he beholds only a treeless desert stretching away to the foothills of the still more distant cordillera; no living green thing, no blade of grass nor little shrub, gives rest to the eye, wearied with the dreary waste of sand. For landmarks, some sharp ledge of gypsum crosses the trails that lead out into the *mesa* toward the towns of the Piura Valley and the Chira; an insignificant eminence, scarcely a hill, too hard baked in the sun to be

blown away, forces the traveler to make a detour and so gets unmerited notice because of its novelty in the widespread monotony. Sometimes the skeleton of a mule or horse becomes a monument to mark the otherwise blind trails. Occasionally the traveler enters a belt of *medanos*, crescent-shaped sand dunes, looking like small, detached fortifications, of which the material is always afloat in the air, traveling to leeward in one eternal migration. In the early morning air you hear a peculiar minor music; if there were trees at hand you might think it the sighing of the wind in their branches; and then you note the flying glassy particles that roll up the slopes of the *medanos* and think in this attrition you have found the source of the mournful cadence that seems to fill the whole surrounding atmosphere. Profanity of science! Be still and listen! It is one of the sad *haravis* of the sierra; the spirits of departed Incas are chanting solemn dirges over the lost children of the sun!

But once in seven years there comes a marvelous change over all this scene. A shower—sometimes two or three showers—wanders away from the mountains and is poured over the arid land. Then what wealth of beauty leaps up under the wand of nature! The hitherto lifeless earth springs into being; grass and flowering plants appear on every hand, growing so tall the rider ahorseback can not see over them. The brilliant yellow leaf of the *amancaes* (*Ismene amancaes*), the red petals of the *begonia geranifolia*, contrasting with the white inner sides; valerians, the beautiful *bomerea ovata*, innumerable varieties of *oxalis*; *solanum*, crucifers, and *amaranths* that live on the nourishment drawn by their long, penetrating roots from the lower soil and waiting all these years to give the world the beauty of their bloom; *martynia* and *aniseia*; *algaroba* (*Proserpis horida*), a stunted honey locust that furnishes the horse feed of the country as it is cultivated along the river banks, the undigested seed dropped by passing animals in their journeys to sprout and root itself this once in seven years

in the desert; the caparis crotonoides; colicodendrum scabridum, called by the people the "dog's sapote," because the hungry curs of the country go to the pampas when other sources of food fail them and eat the fruit of this tree; and more majestic cacti than have ever been seen in any other land; salicornias and salscias—all these and more appear in the desert in the year of rain.

Who but asks, "whence comes this brilliant life?" "How has it slept in the ground these seven years?" It lasts a week, and has been known to continue a month; cattle and great herds of goats wander out of the irrigated valleys across the living fields and revel in the boundless joy. When they return you know the beauty is departing and death is settling on the scene.

Twenty years ago an enterprising Peruvian built an inn mid-road between the port of Paita and Piura, the capital of the department. All his supplies of every kind were brought with toil of donkeys from the valley of the Chira and from the port. Even water and fuel were transported 7 leagues to that door. The inn-keeper had done a good work for the people and looked only for the gratitude and shekels of an appreciative world. What, then, was his surprise when there appeared a planter from the nearest hacienda on the Chira, demanding rent for the half acre of desert that he had made a blessing to all the region. These lands were supposed to be the property of the state and no mortal had ever before made claim to any ownership in them. Now, however, the record showed that Macacará held under a grant from the Spanish Crown which conveyed a certain length "along the Rio Chira and then toward the Orient as far as the goats would go before they returned to the river for water." And it happens that in a year of rain the goats pass the tambo of Congará and go clear out to the foothills "before they return to the river for water."

The Zona Seca of the north of Peru, i. e., in the Department of Piura, possesses a wonderful climate, making it the sanitarium of all the South American coast accessible to its ports. Phthisis,

syphilis, and nervous prostration come here for recovery, sent by physicians everywhere, between Panama and Chile. Even the dead escape the ordinary process of putrefaction. An open coffin in the cemetery contained the body of a deceased priest, as shown by the purple shirt and white cotton drawers in which it was dressed, lying out there in the light of the clear sun of Paíta. A scandalized traveler sought the curate of the parish to report the outrage of this irreverent exposure. "Oh! my dear sir," cried the curate, "you do not understand; that is the body of my friend which I have put out there to dry, so that I may send him to his family in Guayaquil. May he rest in peace!"

Wherever a grave is opened on the coast, some old mummy is unearthed with huacas and various curios of the Inca days, and hundreds of these are to be found in the United States. They consist of mummified bodies, pieces of woven cloth buried with them, earthen jars called huacas, which had been buried with the traveler to the "Unknown," filled with the delicious chicha which he loved so well on earth; his fishing tackle or hunting gear, and a variety of articles made sacred by his use of them in life.

Chapter II.

HISTORICAL SKETCH.

THE CONQUEST OF PERU—GOVERNMENT OF THE VICEROYS—WAR FOR
INDEPENDENCE—HISTORY OF THE REPUBLIC—WAR WITH CHILE—
TERMS OF PEACE.

When Pizarro discovered Peru, he found a great nation enjoying a second epoch in civilization. Of the first but little has been told in the traditions of the Incas. Those inspired monarchs had found and submerged it beneath the new and more refined religion of the divine light, and the sublimely perfect communism they brought with it. Constant employment of the people in systematic labor and organized recreation, without oppression or hurry; with no rank of wealth, among a race too gentle to be ambitious, too docile to be vicious, produced a state in which the Spanish adventurer, who conquered the land, found industry, virtue, and contentment. It was the highest type of civilization yet reached on this hemisphere, and probably the highest of which the aboriginal American was capable.

It is impossible to reflect on the conquest of Peru without a feeling deeper than simple sadness. Human blood boils with indignation against the horrors perpetrated in the name of the Prince of Peace, to convert a race which, after more than three centuries and a half of subjugation, is not yet Christian, but secretly meets to worship after the manner of the fathers; a race which still wears emblems of mourning for the murdered Atahualpa and expects with undoubting faith to see the Inca Messiah return to redeem his people.

The conquest of Peru was consummated by Pizarro's treacherous capture of Atahualpa in November, 1532, without a battle, but with immense slaughter of the unsuspecting, unarmed retinue of the Inca, who had come to welcome the strange visitors to his dominions—a slaughter led by the priest Valerde. Atahualpa was strangled on the square of Cajamarca on the 29th of August, 1533. In 1535 Valerde was made bishop of Cuzco, and Pizarro was created a marquis of Spain.

On Monday, the 18th of January, 1535, Pizarro, with 60 of his followers, laid the foundation of a city which he had determined should be the capital of the new nation of his conquest, and called it "The City of the Kings," in honor of the Spanish sovereigns, Juana and Carlos V, her son. Later it became Lima, a corruption of "Rimac," the name of the river on whose banks it stands, the beautiful city that is to-day the capital of the Republic. Pizarro laid out and began building the Plaza de Armas of Lima, just as it has since been finished. The cathedral of which he laid the corner stone in 1535 was consecrated in 1625, just ninety years later. The palace of government was built on the north and the municipal halls on the west, facing the cathedral and the archbishop's palace, which are side by side. After founding the City of the Kings, Pizarro laid out another city, midway between the capital and that city in the north, which he had called San Miguel de Piura. This new town he called Truxillo, for his birthplace in Spain.

On the 26th of June, 1541, Pizarro, then over 70 years of age, was assassinated in his house in Lima by a revolutionary mob of citizens. After his death, governors and viceroys were sent over from Spain to govern the country, until 1824. The viceroys, though chief magistrates, were not supreme. In legal matters they had to consult the audiencia or council of judges; in finance, the tribunal of accounts; in other branches, the directors of government and war.

In their legislation the Spanish kings and viceroys showed a desire to protect their people from tyranny, but they were unable to prevent the rapacity and lawlessness of distant officials. The country was depopulated by the illegal method of enforcing the *mita*, by which a seventh part of the native population became the constant involuntary laborers of the Spaniards, and an air of sadness and desolation overspread the land which has never entirely disappeared.

In the beginning of the present century, Peru had become the center of Spanish power, and the viceroy had his strength concentrated at Lima. Consequently the more distant provinces of Chile and Buenos Ayres were first able to throw off the Spanish yoke. But the destruction of the viceroy's power was essential to their continued independence. The conquest of the Peruvian coast depended on the command of the sea. Accordingly, in 1818, a fleet consisting of six vessels was fitted out in Valparaiso and sailed north, under the command of Lord Cochrane, a distinguished English naval officer. All the vessels were commanded by Englishmen except one, the commander of which was an American. It was two years before the invaders were able to effect a landing on the coast of Peru, but in 1820 an army of Argentine troops, with some Chileans, under the command of San Martin, landed and marched on Lima, where they were enthusiastically received, and on the 28th of July, 1821, the viceroy having escaped, the independence of Peru was declared. On the 22d of September, 1822, the military commander, San Martin, withdrew, and the first Congress became the sovereign power of the State. After a short period of government by a committee of three the Congress elected, on the 26th of February, 1823, Don José de la Riva Aguero to be the first President of Peru. The second President was General Lamar, who had commanded at the final battle for independence, fought at Ayacucho on the 9th of December, 1824, resulting in the complete route of the viceroy

and his army. General Gamarra was elected third President on the 31st of August, 1829.

For fifteen years, till 1844, Peru was loyally feeling her way to a right use of her independence. Political rivalries brought three men to the fore, who had distinguished themselves in the battle of Ayacucho; Generals Gamarra, Salaverry, and Santa Cruz, who became Presidents by force and were deposed by the people, who were determined to maintain the guaranties of the constitution.

Statesmen, orators, and poets also appeared to defend the right and protest against usurpation. Prominent among these the name of Dr. Paulo de Gonzales Vijil stands forth with a luster born of genius devoted to patriotism and liberal thought; a wise man, virtuous and courageous, he has received the crown of a martyr, illumined with the halo of a saint.

Peru had three new constitutions—in 1828, 1833, and 1839. In 1844 Gen. Ramon Castilla restored peace to the country, and was elected President in 1845. Ten years of peace and increasing prosperity followed, and in 1849 the regular payment of interest on the public debt was begun; steamship communication along the coast was established, and a railroad built from Lima to Callao, its port. In 1851 Castilla retired from office and Echinique was elected his successor; but after three years of successful administration he became suspected of corruption in manipulating the public credit and was deposed by a revolutionary movement led by Castilla, at the end of a struggle that lasted six months. Castilla again became President in 1855, and reestablished order. With the exception of a local insurrection, headed by Vivanco, there was peace in Peru until the Chilean war broke out in 1879.

The present constitution of the nation was framed in 1856 and revised by a commission in 1860. Slavery and the Indian tribute of the *mita*, only another name for slavery, were abolished by its provisions.

In 1862 Castilla was succeeded by his friend, the Grand Marshal Miguel San Roman, who had been a captain in the battle of Ayacucho and was distinguished for his military skill and executive ability. Unfortunately, the nation was early deprived of his patriotic services by death, and the First Vice-President, General Pezet, who was absent in Europe, returned and was inaugurated in 1865. Pezet's administration was disturbed by what is known as the "Question Talambo." Spain, having signed a treaty acknowledging the independence of Peru in 1853, sought to regain control of a land which had contributed magnificent treasures to her wealth, and claimed \$3,000,000 indemnity for damages alleged to be due to certain Spanish immigrants who had settled in the valley of Juequetepeque. President Pezet prudently temporized with Spain while he was putting himself in a position of defense. But his conduct was misunderstood by the people, and he resigned the Presidency rather than be the cause of civil war. Colonel Prado was declared Supreme Chief, and made a treaty of defense with Chile that resulted in driving the Spanish from the coast, which they left hurriedly on the 9th of May, 1866, after a decisive battle fought on the 2d of that month; a battle that created one of the most important holidays of the Republic and has given a name to many institutions; the "Dos de Mayo" will forever live in the memory of Peruvians as a glory in her history. Through the medium of the United States a truce was arranged between the contending powers, and on the 14th of August, 1879, a definitive treaty of peace was signed between Peru and Spain.

But the return of peace reminded all parties that Prado was not a legally elected President of the Republic. Castilla, always the loyal monitor of his country, initiated the movement of correction, but died before it was settled. Col. José Balta took up his sword where Castilla had dropped it and forced the retirement of Prado, after which he was elected constitutional President on the 2d of August, 1868.

At this time the public debt of Peru was only \$22,000,000, and the interest had been regularly paid since 1849. Under the influence of an enterprising American, Mr. Henry Meiggs, of California, who went to Peru at about the time of Balta's accession to power, an immense system of public works was projected, to be paid for out of the proceeds of the sales of guano, of which Peru was fortunate (or unfortunate) in being almost the exclusive owner of the world's stock. The possession of this real wealth and the manifestation of integrity in the payment of interest on the hitherto small public debt gave Peru a name of rare value in the money centers of Europe. The public debt was augmented to reach the sum of \$245,000,000, and the sales of guano were insufficient to meet the interest.

President Balta was succeeded on the 2d of August, 1872, by Don Manuel Pardo, one of the most distinguished men the country has produced, an honest and enlightened statesman, who did all in his power to rescue the State from the financial embarrassment into which it had fallen, a problem he found incapable of solution. He struggled with it until 1876, when he found it impossible to pay the interest on the bonds, and the country was bankrupt.

Pardo was the first civilian who had ever been elected to the office of President of Peru. Morally and intellectually he would have been a man of mark in any country. He was popular as a magistrate. But all he could do to alleviate the economic condition of his country was to curtail expenditure in every department of the administration. As the price of guano had fallen to a non-paying figure in European markets, he strove to obtain larger returns from the nitrate deposits of Tarapacá; and in 1875 the State was authorized to buy in all the nitrate works and establish a monopoly.

Adjoining the Peruvian nitrate district was the Bolivian territory, also rich in similar deposits and being worked at that time by

Chilean companies and English capital, having their headquarters in Chile. The Peruvians and Bolivians believed they saw a disposition toward encroachment on the part of their southern neighbors, and entered into a defensive alliance for mutual protection against any attempt to seize their coasts. Neither really expected war and neither was prepared for such an event. Meantime the Chilean navy had been growing to formidable dimensions, and when at last the war did come it found the combatants in the unmatched condition that might have been expected, with the obvious result of such conditions.

But the national disaster was not in the time of Pardo, who devoted himself to promoting useful measures of reform in every department of his Government. He organized a national corps of engineers and architects, composed of native and foreign members of these professions, who were divided into four classes according to their experience. To these was added a corps of Peruvian adjutants, also divided into four classes according to their qualifications, who were really the apprentices and students of the experienced men, whose places they were thus being qualified to take in the future, furnishing by this method a corps of native-born engineers and architects independent of all foreign element. President Pardo's principal adviser in this work was Don Eulogio Delgado, a graduate of the Lawrence Scientific School of Massachusetts, and of the École Polytechnique of Paris. Señor Delgado is a member of one of the oldest families of Peru, and has been foremost in leading his country in the true direction of national prosperity, which he believes to lie in the development of industries rather than in speculation. To this end he established a model farm near Lima to illustrate the possibilities of Peruvian agriculture, considered the true basis of the country's wealth. He has given a great deal of attention to the subject of irrigation of the marvelously fertile deserts of northern Peru, and under the

encouragement of Pardo made extensive surveys in the Department of Piura for the formation of projects that might bring foreign capital to that interesting region.

Chinese immigration had become an important question for treatment at the hands of Pardo. Chinamen first began to arrive in Peru in 1849, and by 1853 nearly 3,000 had been landed. They were coolies engaged under contracts made at Macao, from which port they were shipped, and became on arrival the slaves of those who bought them for a term of years, generally to work on the sugar plantations of the coast, on the railroads, and in the loading of guano. In 1856 the importation of Chinese was prohibited by Congress, but again authorized in 1861, when the liberation of negro slaves made a demand for more labor than the freedmen were willing to furnish, and of more reliable character for the valleys of the coast. In the years 1861-1872 nearly 60,000 Chinamen had arrived in the country. They were bound to serve eight years and received \$1 a month in silver, and their food, with a stipulated amount of clothing. By the influence of President Pardo, the Portuguese at Macao abolished contract emigration in 1874 altogether, in order to secure direct emigration from Chinese ports; and then Pardo set himself to arrange conditions with the Chinese Government that would give Peru a better class of laborers and destroy the infamous trade in coolies—in reality slaves—while providing a regulation of justice by which the contract laborer should be able to regain his liberty to make new contracts when his stipulated term of service had expired; for under the old system many men were being held to labor at the paltry pay of coolies after their apprenticeship was ended.

A registry of coolie contracts was established at Lima, and the officers see to it that when a man's contract expires he is so notified and given his liberty to do what any other laborer may do. If his employer fails to inform the man at the proper time he is subject to a fine. If the Chinaman wishes to return to his own country, his

introducer is bound to give him a free passage home. Two Asiatics, acting as police and interpreter, are attached to the prefectura of every department to see that their countrymen are not abused and to secure them all the rights the treaty with China has conferred on them. There are two important Chinese firms in Lima whose members have served out terms as coolies. There are a Chinese club and theater, and two Chinese benevolent societies in the cities. Along the coast the chola women fall readily into the arms of Chinese lovers, and if the church is not called in to solemnize the union the omission does not seriously affect the social life of the family. The Chinaman has proved a favorite in such a relation because of his sobriety and gentle devotion to his mate.

In his negotiations with the Chinese Government the President was served by a faithful friend and patriotic officer of the Peruvian navy, Don Aurelio Garcia y Garcia, who conducted the business with singular ability, attested by his success. President Pardo had been educated in an English banking house, and was an excellent statistician, which he turned to good account in his term of office. During that time he made a census of the people of Peru, which was really the first earnest attempt at such a work; it showed a population of 2,700,000 souls, exclusive of the aboriginal Indians of the montaña, estimated to amount to 300,000 more. He also established a statistical department of the Government, divided into branches for census, territory, archives, movement of population, death rate, judicial and police, commerce and agricultural. The first publication of the department was a work on the political divisions of the Republic, with an enumeration of cities, towns, and villages; also tracing the history of these divisions since the Conquest. A map of Peru was compiled under the direction of the corps of engineers, assisted by the distinguished naturalist and geographer, Antonio Raimondi. He also established a geographical society, and began the publication of Professor Raimondi's great work on Peru. This distinguished scientist, a native of

Milan, went to Peru in 1850 and visited every part of the country, surveying, collecting, and annotating for several years. He first published a volume on the Department of Ancachs, in 1873, and followed it with three volumes on the natural history of Peru, which are a splendid contribution to the scientific literature of the world. They are equally an honor to Professor Raimondi and the liberality of the Government, which showed a fine appreciation of his work and made it possible for him to give it to the world in creditable shape.

President Pardo also founded a fine-arts society, with the duty of administering the buildings in the public garden of Lima, which had been the site of a grand industrial exhibition. He intended the salons of these beautiful edifices for the establishment of a general museum, a school of painting and sculpture, and a music hall. It is difficult to estimate what might have been the ultimate results of this singularly wise administration. The terrible war with Chile interrupted the progress of the country and drew the attention of the people away from that higher civilization toward which they were marching to be concentrated on the more immediate duty of defense against foreign invasion.

Manuel Pardo's term of office ended on the 2d of August, 1876. He was succeeded by Gen. Mariano Ignacio Prado, during whose administration the war with Chile occurred.

The unexpected declaration of war by her southern neighbor, in April, 1879, found Peru wholly unprepared on land and sea for such an emergency. The Chileans were successful, and after the continuation of hostilities for five years, during which Peru exhibited unexampled patriotism and devotion, a treaty of peace was signed by Iglesias, at the time acting President of Peru.

During the war Prado had left Peru to visit Europe, leaving the Government in the hands of the First Vice-President, General La Puerta. The departure of the President created an excitement in Lima that ended in the retirement of the Vice-President.

This incident caused General Pierola, who had been a member of Balta's Cabinet, to get possession of the Government, which he assumed by tacit consent; but on his leaving the city, and the appearance at its gates of the Chilean army, Dr. Garcia Calderon, an eminent lawyer of the capital, was invited by leading citizens to assume direction of affairs. His Government was recognized by the United States, Switzerland, and the Central American Republics. He attempted to arrange a peace with Chile, but found that the demands of the latter were unacceptable, and asked that the United States be invited to arbitrate the questions in dispute. The proposition was refused, and Dr. Calderon was sent a prisoner to Chile. The invaders then placed the Government of Peru in the hands of Iglesias, and arranged with him for peace under the following terms:

I. Relations of peace and amity are reestablished.

II. Tarapacá is ceded to Chile unconditionally and forever.

III. The territories of Tacna and Arica, as far as the river Samá, are to be held by Chile for ten years, and it is then to be determined by a plebiscite whether those territories are to belong to Peru or Chile. Whichever country secures them is to pay to the other the sum of \$10,000,000.

IV. By a decree of February 9, 1882, the Chilean Government ordered the sale of 1,000,000 tons of guano, the net proceeds, after deducting expenses, to be divided equally between the Chilean Government and the creditors of Peru, to whom the entire proceeds had already been secured by contract, in the time of Balta. When the sale is completed the Chilean Government will continue to pay to the Peruvian creditors 50 per cent of the net proceeds of the guano actually being worked, until such deposits are exhausted. The product of the deposits that may hereafter be discovered in the ceded territory to be the property of Chile.

V. If deposits of guano are hereafter discovered in territory belonging to Peru, the two Governments will jointly determine as to the conditions to which each must bind itself in disposing of the article, and this holds good as regards the Lobos Islands when they are delivered over to Peru, the object being to avoid competition between the two Governments.

VI. The Peruvian creditors referred to in Article IV must agree to the registration of their documents and to the other regulation of the decree of February 9, 1882.

VII. The obligation of Chile under Article IV is to be observed whether the guano be extracted by virtue of the contract for the sale of 1,000,000 tons, or by any other contract, or on account of the Chilean Government itself.

VIII. The Chilean Government, as regards nitrate, does not recognize lien of any nature whatever that can affect the territories acquired by this treaty.

IX. The Lobos Islands to be held by Chile until the exportation of the 1,000,000 tons of guano referred to in Articles IV and VII is completed, and then to be restored to Peru.

X. The Chilean Government agrees to cede to Peru the 50 per cent of net proceeds of Lobos Islands guano, corresponding to the said Government.

The treaty containing these provisions was ratified by an assembly on the 8th of March, 1884. Meanwhile the constitutional Congress of the Republic had met at Arequipa in March, 1883, and elected Garcia Calderon the constitutional President, with Admiral Montero and General Cáceres First and Second Vice-Presidents.

After peace had been signed by the Peruvian commissioners and ratified by an assembly, the Chileans left the country, and Cáceres marched upon Lima to remove Iglesias. Having reached the capital on the 1st of December, 1885, he sent an appeal to Iglesias to join him in naming commissioners for the settlement of differences and the restoration of constitutional government without more bloodshed. "Let us remember," he said, "that we are Peruvians and not enemies." Iglesias was in his power and consented.

The patriotism of Cáceres was of the highest order. His prudent conduct secured the peace of his country. Patriotic citizens emulated their General in the exhibition of fraternal spirit, and past political offenses were cordially forgiven, so that men whose ambition had led them into treasonable attitudes were invited to return to their country and assist in raising it from the unhappy condition to which the war had reduced it. Under the liberal decree of a general amnesty exiled citizens returned to their beloved country; among them came General Prado. Iglesias

went back to his home in the mountain city of Caxamarca, and Cáceres had the satisfaction of seeing his country once more restored to peace, after having fought its battles incessantly for six years.

A constitutional Congress met at Lima on the 30th of May, 1886, and Cáceres was unanimously elected President of the Republic.

President Cáceres was called to a most distressing task. The country was utterly ruined; the pall of death covered every household; the repeated massacre of Indians and the loss of the flower of the country's manhood on the battlefield had greatly reduced the population. The treasury was empty. The country had been robbed of all visible means of recuperation. Only poverty seemed to thrive, and it stalked abroad in sullen pride. Cáceres began as Pardo had done before him, reducing the expense of administering the Government to the lowest terms. Recognizing the importance of the Indian element in the population, he issued a circular to the prefects, placing the Indians on an equal footing with the Peruvians of Spanish descent, and securing them the same rights and privileges.

The army was reduced to an effective force of 6 infantry battalions, with 2,400 men; 2 cavalry regiments, 600 men; 2 brigades of artillery, 500 men. For police there was a gendarmerie of 2,400 men. This small army, while ample for all the requirements of peace, was a smaller force than Pardo had thought necessary. The navy was reduced to two small steamers, the *Peru* and *Santa Rosa*. Both army and navy are in excellent hands, and form a school for rising officers that has no superior in the world in the practical ability and devotion of its professors, the patriotic officers who have already proven their public spirit in the battles of a terrible war.

Another duty falling to the new Government was the restoration of the various institutions of learning and art, which had

suffered much during the war. The public library, which had contained nearly 60,000 volumes in 1880, including rare editions of the Bible, Elzevir and Delphin editions of the classics; excellent collections of philosophy, history, and science, and a very complete assortment of works on American archæology, almost all of which were scattered to the winds, was partially restored by the eminent Peruvian poet and author, Ricardo Palma, after many months of severe labor, in which he was assisted by the loving hands of many Peruvians, public-spirited men, who employed themselves in gathering the scattered and flying leaves from the streets. Spain, Argentina, the United States, and Ecuador came forward with contributions of books, and on the 28th of July, 1884, the national library was solemnly reopened with 28,000 volumes.

Dr. Francisco Garcia Calderón, after suffering imprisonment that greatly injured his health, returned to Lima to become the president of the Senate and rector of the university.

The administration of General Cáceres was a constant struggle with adverse circumstances. But while it was not possible to so much as meet the interest of the foreign debt, he succeeded in restoring perfect order in all parts of the Republic and in every department of the Government. During his administration the famous Grace contract, by which Peru was relieved of the burden of her vast foreign debt, was discussed in successive Congresses and finally perfected to the satisfaction of her creditors and the advantage of the country.

On the 10th of August, 1890, General Cáceres surrendered the office of President, which he had held the legal term of four years, into the hands of his successor, Col. Remijio Morales Bermudez, as constitutional President of Peru, while Cáceres has been complimented with the honorable position of minister to Great Britain and France.

Remijio Morales Bermudez, born September 30, 1836, became at the age of 18 a sublieutenant under Castilla in a Tarapacá regiment; and was made a major for meritorious service in 1862. He served under Balta as commandante at Iquitos, on the head waters of the Amazon, and Pardo had made him subprefect at Truxillo. He did splendid duty for his country during the Chilean war, and finally attached himself to General Cáceres in the movement against Iglesias. His administration has been like that of his predecessor, one of patriotic devotion to his people. Peru, under him, was in possession of a firm and stable government, under the influence of prudent, far-sighted statesmen, who devoted themselves to the material development of their country and the elevation of the people.

Chapter III.

FINANCIAL CONDITION—SETTLEMENT WITH FOREIGN BOND-HOLDERS—RAILWAYS AND THEIR PROPOSED EXTENSION—NAVIGATION FACILITIES—LINES OF TRANSPORTATION—OROYA RAILROAD—TELEGRAPH AND TELEPHONE SYSTEMS.

At the close of the Cáceres administration the annual income and outlay of the Peruvian Government were as follows:

INCOME.

Customs, amount actually received.....	\$4, 955, 944
Taxes on consumption of—	
Tobacco	\$276, 049
Alcohol.....	250, 476
Opium.....	233, 430
Miscellaneous.....	154, 195
	914, 150
Telegraphs.....	30, 651
Post-office	156, 352
Railroads	36, 306
Various.. ..	310, 022
Balance.....	513, 921
Total income in that year.....	6, 917, 346

In administering the Government Cáceres has pursued the policy that characterized the administration of Pardo, reducing the expenditures to the lowest terms by the practice of honesty and economy. These amounted, during the year for which the income has been already stated, to \$6,053,962, distributed as follows, viz:

Salaries of members of Congress ..	\$253, 458
Civil departments	759, 533
Foreign affairs, missions, etc.....	220, 807

Instruction, justice, ecclesiastical	\$412, 579
Finance and trade	1, 076, 632
Army and navy	2, 257, 976
Supplementary credits of former years	733, 916
Miscellaneous	339, 061

This statement shows a balance in favor of the Government of \$863,384, a considerable part of which has been applied to paying the interest on the internal debt, the principal of which amounts to \$35,000,000.

As already stated, the foreign debt of Peru has been arranged by the Government in agreement with the foreign bondholders, represented by Mr. Michael P. Grace and Lord Donoughmore, of London, who submitted a proposition to the administration of General Cáceres, which, after due discussion and amendment by four successive Congresses, received the general approval of the country and has become a contract between the parties.

The scheme was that the bondholders should form a corporation to receive from the Peruvian Government all the railroads for a term of years, with mining privileges and grants of land for immigration. In return the bondholders were to deliver over to Peru one-half her obligations abroad and look to Chile for a settlement of the other half. Chile protested, but the British Government took such action to protect her subjects that on the 8th of January, 1890, a protocol was signed between Peru and Chile that enabled General Cáceres to close the contract with the bondholders, by which the foreign debt is canceled with satisfaction to the creditors and honor to Peru. Chile has ceded to Peru, and Peru has transferred to the bondholders, the money derived from the sale of guano, which was deposited in the Bank of England, amounting to £558,565; 80 per cent of the sums received by Chile for the sales of guano since the year 1882, £489,143, and the product of the guano deposits now being worked, including those on the coast of Tarapacá, for eight years, which is estimated at 80,000 tons, yielding a revenue of £160,000 a year.

The debt which by the contract has been wiped out, amounted in 1886 to £51,423,190. That instrument, as approved by Congress, contains thirty-five clauses, of which the following is a summary. The bondholders release Peru from all her foreign obligations; in return, the Peruvian Government cedes to the bondholders all the State railroads for sixty-six years; these are the Mollendo to Puno, on Lake Titicaca; Callao to Chicla, to be continued to Oroya, and Juliaca (on the Mollendo and Puno) to Santa Rosa, to be continued to Cuzco. Of these there are the following in operation:

	Miles.	Cost.
		(Soles.)
Mollendo to Arequipa	107	\$12,000,000
Arequipa to Puno	220	30,000,000
Juliaca, near Puno, on the Arequipa and Puno line	66	.....
Callao to Oroya	136	26,600,000
Pisco to Ica	48	.....
Lima to Ancon	22	2,600,000
Chimbote to Suchiman	30	.....
Pacasmayo to Yonan and Guadalupe	66	.....
Salavery to Truxillo and Ascope	53	.....
Paíta to Piura	62	2,000,000
Total	810	

It is not possible to state the cost from any known data, as several are parts of incomplete contracts that the Grace contract has undertaken to perfect, in which case the following extensions will be made:

	Miles.	Cost.
		(Soles.)
The Juliaca and Santa Rosa to Cuzco	206	\$25,000,000
The Chimbote and Suchiman to Recuay	135	24,000,000
The Salavery to be extended	32	3,400,000
Previous data brought down	810	73,200,000
Total	1,183	¹ 125,600,000

¹If they had been built and completed in accordance with the original contracts.

In addition to these lines of railroads, the corporation of bondholders gets the free use of the moles and quays at Mollendo, Pisco, Ancon, Chimbote, Pacasmayo, Paita, and Salavery.

The bondholders undertook to finish the line from Chicla to Oroya in three years, and have already fulfilled the obligation. They are to build from Santa Rosa towards Cuzco, as far as Sicuani, within four years, and complete 160 kilometers within six years on other lines, and are at this time actively engaged on the work. They were to repair all the existing lines and have them ready for traffic within two years. The Peruvian Government also ceded to the bondholders the right of free navigation of Lake Titicaca, the vessels to be commanded by Peruvians of the navy; also 3,000,000 tons of guano, from all the deposits except that on the Chincha Islands, which is to be retained by Peru for the use of home agriculture. Peru also agrees to pay the bondholders thirty annuities of £80,000 each, secured by hypothecating the revenues of the Callao custom-house, making an aggregate sum of \$2,000,000, the payment of which will begin in October of the year 1893. The bondholders are empowered to issue mortgage bonds against their holdings, up to the sum of £6,000,000. To carry out the terms of this contract between the Peruvian Government and the foreign creditors, a company was organized in London in April, 1890, called the Peruvian Corporation, of which the creditors became the stockholders by exchanging their 6 per cent bonds for shares in the company, at the rate of a £100 bond for a share of preferred stock, worth £24 at par, or for one of the ordinary shares of £30 par value. These terms have been accepted by practically all the bondholders.

In the concessions made by Peru, whether in this "Grace contract" or in those granted to other foreigners for the purpose of developing the natural wealth of the country, that Government has protected with patriotic care the interests of her own children by specifications that secure them a share of employment on the

various works. In the present case one-half of all the railroad employees are to be Peruvians.

Peru is thus relieved of the burden of her foreign debt by the honorable method of delivering to her creditors the works for which their money was expended. While it can not be said that her credit is reestablished, she is on the road to that desirable condition; not only in having submitted willingly to the inevitable sacrifices caused by the foreclosures, but by severe fidelity to her obligations under the contracts, in which she has extended every possible assistance to the concessionaires, who are largely dependent on the national integrity for the good results of their negotiations.

The interest on the internal debt of about \$35,000,000 is provided for by the tax on alcohol, 5 per cent of the customs dues, and some other taxes set apart for the purpose.

The great work passing into the hands of the "Peruvian Corporation" is the celebrated Transandean Railroad, begun by Mr. Henry Meiggs, nearly a quarter of a century ago, and paralyzed in its course by the financial disasters of the country. This line, originally suggested by Don Manuel Pardo, long before he became the President of the Republic, was designed to reach the valley of the Oroya and bring into connection with the coast, and therefore a market, the fertile region of the sierra; also to open up to the citizens of Lima a district famous for its salubrity of climate.

The construction of the line would lead to the agricultural development of the valley of the Jauja, celebrated for its wheat-producing capacity and as a sanitarium for consumptive invalids. But when the progress of the work led to further investigations the possession of the Cerro de Pasco silver mines became the grand objective. These mines had been worked by the Spaniards early in their control of the territory, and had returned such wonderful treasures for the rude methods employed that when they

were drowned by floods which no known means could arrest, the accident was reckoned a national calamity. Only in the day of Mr. Meiggs, when boldness in engineering designs had become the common thing in Peru, did it seem practicable to relieve the mines of water by driving a tunnel from a point down the mountain slope to the bottom of the mine and open a drainage channel that should keep the silver drifts free from flood. The scheme was first proposed to Mr. Meiggs by Mr. Ernest Mallinoski, the chief engineer of the transandean line, and under his directions surveys were undertaken which developed the practicability and value of the project. The excavation of the tunnel was begun in 1876, and in common with all other Peruvian enterprises abandoned when the country became hopelessly involved in financial ruin. The Peruvian Government had given Meiggs a concession for working these mines, and he had imported a heavy invoice of machinery for its prosecution, comprising an 80-stamp mill, which lay at a railroad station for many years, paralyzed like all other instruments of progress in the country. The concession of Meiggs lapsed by reason of failure to complete his contract, but in this condition his executors transferred his rights to Grace, who in his turn, after having it confirmed to him by the government of Iglesias, transferred it to the "Peruvian Corporation."

Up to the present no agreement has been arrived at between the Peruvian Corporation and the Government, which insists on retaining a larger share of the proceeds of wealth sure to flow from a development of the work in proper hands and with modern machinery, than the Peruvian Corporation has been willing to give.

Means of transportation.—While the Cerro de Pasco has been the long-sought terminus, not yet attained, English enterprise reaches still farther into the eastern provinces of Peru, and is seeking a commercial outlet by the Atlantic through the Amazon River. To this end surveys are now in progress from the termi-

nus of the Central Railroad of Peru, as the transandean line is called, that shall pass by Tarma to the head of steamboat navigation at the foot of the falls on the Perene, a principal tributary of the Amazon. This point is 1,000 feet above the level of the sea, from which it is about 4,000 miles distant.

There is already some navigation of the Amazon branch which reaches the little port of Iquitos, where a steamer arrives once a month. The principal traffic is in crude India rubber.

In addition to the Central Railroad, and other lines included in the preceding table of "lines in operation," there are several steamship lines on the coast, and three steel steamers engaged in traffic on Lake Titicaca, the highest navigated water on the globe. These vessels, formerly the property of the Peruvian Government, have, in accordance with the terms of the contract, been turned over to the Peruvian Corporation.

Two important steamship companies compete with each other for the coast trade of the Southern Pacific, with Europe and the United States. The Pacific Steam Navigation Company was first inspired by the American, Wheelwright, who had been a consul at Guayaquil (Ecuador) and saw the growing advantages of South American commerce. His countrymen giving no heed to his representations on the subject, he went to England with his ideas and met a substantial welcome, of which the outcome has been the most extensive fleet of commercial steamers in the possession of one company that the world has yet seen. They run one set between Panama and Valparaiso, touching at the various ports en route in such a manner that all the principal ports get weekly service, while the minor ports are visited less frequently, and smaller ships do the local freight traffic along the shore. The whole business is shared by a Chilean line, La Compañia Sud Americana, owned by English capitalists and subsidized by Chile, whose flag they fly, and to whom they are bound as national transports in the event of that power becoming involved in war. This



VILLAGE OF CHICLAY, ON THE OROYA RAILWAY, 12,200 FEET ABOVE THE SEA.

line is running some of the largest and finest ships in the world, as to outfit. All the coast lines of steamers connect at Valparaiso with a line to Liverpool owned by the Pacific Steam Navigation Company. The passenger ships of all these lines are 450 feet long, 49 feet breadth of beam, and 34 feet depth of hold, with a freight-carrying capacity of 5,700 tons.

The freight and passenger rates on the Pacific Steam Navigation and South American companies' steamers are exorbitant, and discriminate against the American shipper, who sends all his trade, which does not take sailing vessel around the Horn, by way of Panama. Thus the freight on live stock, which must necessarily be sent by the most expeditious route, is about double the rates in any other sea. From Panama to Callao the freight on a horse is \$38, American gold; on a cow or ox, \$12; on a donkey, \$21, while the rate of passage is \$160 for first class and \$40 on deck. The charges of the Pacific Mail between San Francisco or New York and Panama are even worse, with inferior accommodations.

In addition to these regular lines the French and Germans have freighting cruisers, with fair but limited accommodations for passengers, doing a semi-monthly service along the coast. The Germans have extended this traffic up the Central American coast and into Mexico, whence they are shipping out the valuable dye and cabinet woods with great celerity.

English speculators have reckoned largely on superseding the Pacific routes with steamers plying between ports on the upper Amazon and Liverpool via the Atlantic Ocean. When, however, we reflect that from any port on the Peruvian Amazon to the port of Callao will be only two days' travel by rail after the trans-andean line is open for use, and that only 1,500 miles of the most peaceful water on the face of the globe lies between Callao and Panama; and further, that from the Amazon ports via the river to a point in the stormy Atlantic as near Liverpool as Panama will at present rates of travel require at least fourteen days for the out-

ward trip and twenty for the inward, of which 3,000 miles will be against the currents of the great river, we are enabled to understand how much money there is lying around loose in European markets waiting to be thrown upon the waste heap.

In the north of Peru is the River Chira, navigable for nearly 200 miles in the main stream and tributaries for steamers drawing in the driest time 3 feet and in the full season from 6 to 10 feet. The valley is well cultivated throughout its whole extent and has no present means of transportation save mules and donkeys, which carry freight between the plantations and the Paita and Piura Railroad, of which a short section of 20 miles runs along the side of the valley. Stern-wheel steamers, suited to the carriage of passengers and freight, would find in this stream an excellent investment, as the river flows directly into the Bay of Paita, where steamers of all classes make regular entries in traversing the coast.

There are no highway roads in Peru. In no section is the freight of the country hauled on wheels or its passengers transported in stages, unless, indeed, we except the very limited district in the valley of the Rimac, near Lima. Everything in the way of supplies and the export of produce is moved on the backs of mules and donkeys; passengers travel in the saddle. The horses being gentle, well-trained beasts, there is less difficulty in this method of locomotion than one may at first view imagine. In the sierra you will meet my lady mounted on her splendid saddle mule, leading off for a trip of a day or two among the mountains, followed by her cargo mule and servant.

The llama is still in use in the puna and somewhat in the sierra. This remarkable little animal, which has been called the camel of the Andes, was found by Pizarro among the Incas, who had domesticated it to carry burdens, being the only beast so employed on this continent before the introduction of European civilization. An interesting feature of its domestication is the fact that, while its docility has been so utilized, the creature will



LOADED LLAMAS.

not permit abuse. It will carry almost exactly 100 pounds; if more is put upon it you may kill it before you can make it move a step. It shoots upon its human enemy a mass of filthy mucus from its nostrils that is worse to endure than any kick of a mule, but it is kind and loving when well treated. In the freighting bands, which embrace from a score to 100 of these animals, there is always a leader, an old fellow, decked out in ribbons and scraps of colored cloth of various bright hues clear up to his ears, and thus his decorated head is always in sight of his followers.

While English launches are in general use for the transshipment of freight and passengers between the shore and ships in all the ports in Peru, the balsa, just as Pizarro discovered it, a raft of buoyant logs, is still a popular vessel for navigating the coast and doing the work of launches in some of the northern ports, where the balsa timber is easily procured from the rivers of Ecuador. The caballico (pony) is a smaller raft than the balsa and is made of fagots of straw or reeds, a foot in diameter, and laid side by side from two to four bundles wide. The fagots are drawn to a long point at each end and given an upward turn; they are a contrivance of the Inca days, and are used both in the stormy waters of the Titicaca and in riding the surf of the open roadsteads on the coast.

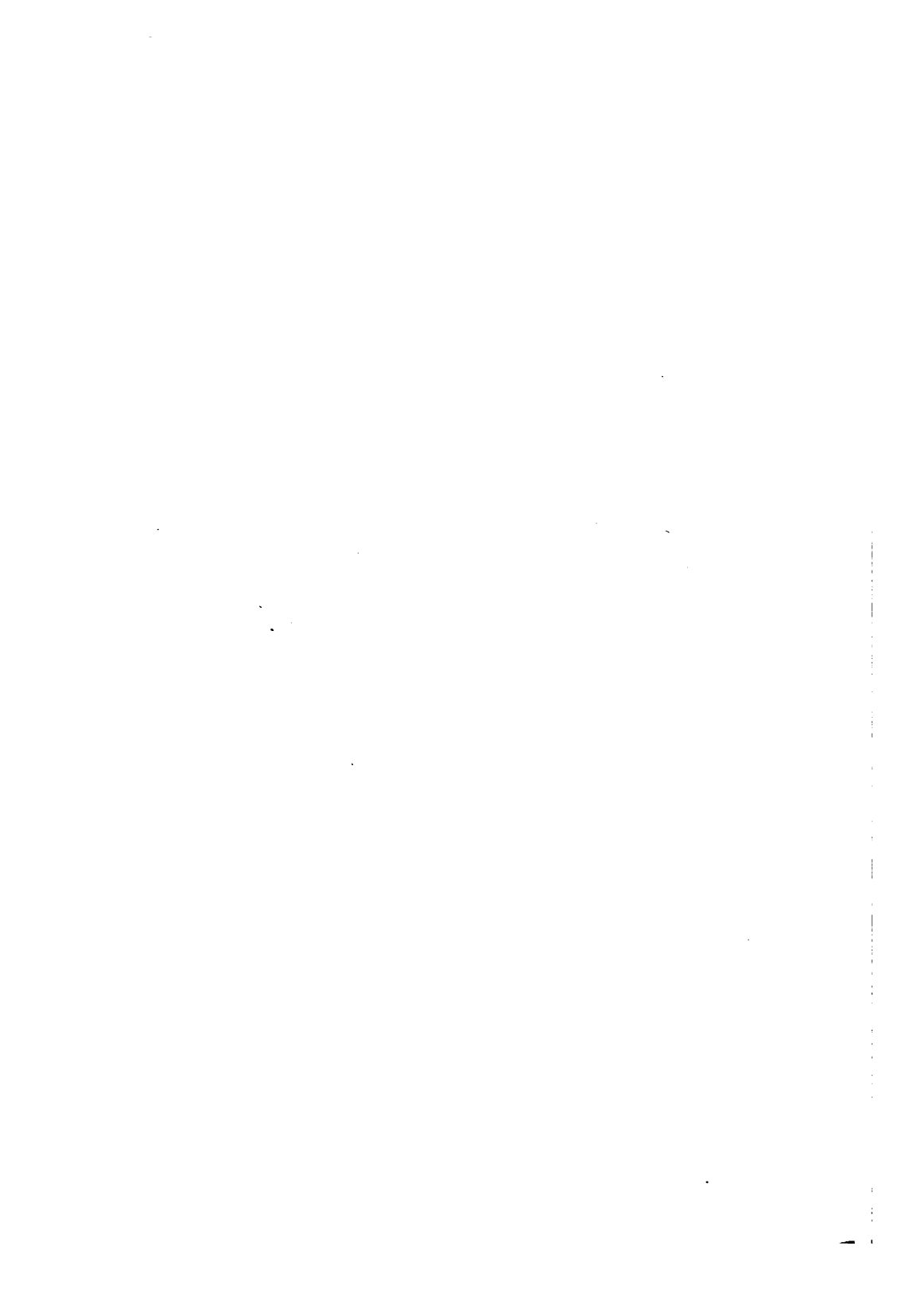
In addition to the lines and methods of transportation thus named are several lines of street railway in Lima and other cities. Twenty miles of this improvement are found in the capital and suburbs, over which the fares are 10 cents, while Arequipa, Truxillo, Piura, and the port of Paita all enjoy similar advantages, and other cities are reaching out for the "tram." There are but few private railroad lines in Peru. The oldest, and so far the most prosperous, was built by Peruvian capital and afterwards sold to an English corporation, which now controls it. This line runs from the capital to its port of Callao, and is known as the "English line," to distinguish it from the parallel built

by Henry Meiggs and known as the "American line." The English company afterwards extended their enterprise by the construction of a line from Lima southward along the shore to Chorillos, a fashionable watering place, passing through the pretty villages of Miraflores and Barranca, a distance of 7 miles, and accommodating the population who, having business in Lima, prefer a suburban residence, or who in the summer, from November to May, seek the comfort of delicious sea breezes or the luxury of sea bathing.

A private corporation has built a railroad connecting the city of Piura with Catacaos, a city of 25,000 inhabitants, 6 miles distant. Other lines are generally subsidiary to some special interest, principally the sugar industry. Thus, in the valley of Chicama an extensive system connects the sugar plantations with each other and with the port of Salavery. The same is true of the Santa Valley, where private lines connect the various *trapiches* and their mansions with the railroad line from Recuay to the coast at Chimbote Bay. Railroads also run from the ports of Eten and Pimentel to the cities of Lambayeque and Chiclayo, and thence into the rice-producing region of Fereñafe, a distance of 50 miles.

In the city of Lima and in Callao one may find carriages and other classes of wheeled vehicles, but nowhere else in all the Republic. There is a fine turnpike between the capital and its port, but it is not much used for pleasure travel, though it makes an important competition with the two railroads for moving freight.

The Oroya Railroad, now known as the Central of Peru, to which reference has already been made, was the conception of Don Manuel Pardo while yet a private citizen; being the result of a visit in search of health to that part of the sierra in which the wonderful line has its terminus. His report became a revelation to the intelligence of Lima, which till then had but little appreciation of the agricultural value of the region or its salubrity of





LITTLE "INFERNILLO" BRIDGE (OROYA RAILWAY). ALTITUDE, 10,924 FEET.

climate. The interest of Pardo became general, and led to the construction of a work which has come to be regarded as one of the wonders of the world. It is a railroad of the first order in every detail, being unsurpassed in the character of its bridges, which are of iron; its masonry, which is all coursed with fine-cut joints of bed and build; in the finish of tunnel approaches, which enter each work under architectural designs of rare taste and workmanship, and in the beauty of its station houses, which are exquisite in design, permanent in character, and perfect in all their appointments. This stupendous work, undertaken by Henry Meiggs, was the grandest object of his life; he determined that, whether he made or lost money in it, he would make the most perfect railroad in the world, although it was the most difficult to build.

The Oroya Railroad leaves the port of Callao at 9 feet above sea level, and in a distance of 106 miles surmounts an elevation of 15,665 feet, where it passes, by a tunnel, under the summit of Monte Meiggs—so named for the famous *empresario*—which rises 2,000 feet higher. After leaving Callao the line passes four stations in Lima, ascending with great uniformity 500 feet in a distance of 7 miles along the left bank of the river Rimac, through fields of eternal verdure produced by irrigation from the waters of the stream. At Villegas, 2 miles above Callao, is the tomb of Henry Meiggs, who lies by the side of his greatest work. A mound and a cross are the simple marks of his resting place; his monument is the Oroya Railroad.

Thirty three miles up the line is the station Chosica, 2,800 feet above sea level, now a famous health resort and much sought in both summer and winter for its delicious temperature, which is blessed by cool winds in the hot months and by sunshine when Lima lies under a chilling fog bank in July. Forty seven miles from Callao, at 5,000 feet elevation, is San Bartolomé, where an extensive system of “switchbacks” and distance “development”

begins, for the purpose of reducing grades. The train here is pushed backwards up a steep ascent and then switched to the line of its course, making three terraces along the mountain side and rising in the following 5 miles 1,000 feet to a tunnel under the Cuesta Blanca (White Hill), passing the celebrated Verrugas Viaduct, a cantilever bridge nearly 300 feet above the bottom of a ravine generally dry but a raging torrent during the floods of every February. Throughout this portion of the Rimac's narrow valley the mountains tower in imposing grandeur above the railroad works and the river. Utterly drear, bare, and unpromising as they appear, they are still marked with the lines of those old Inca terraces that testify their wealth-producing power under the magic touch of irrigation. Here, too, some points of the railroad are thrown into a remarkable vista. After leaving the main valley and ascending a lateral ravine for the purpose of developing distance, the line returns and crosses the Rimac to its right bank. As the bridge is traversed a similar structure for returning to the left bank and three tunnels, one above another on the mountain side, come into view, all features in a single picture. At $63\frac{1}{2}$ miles from Callao, and 8,000 feet above the sea, is Matucana, which, like Chosica, has become famous on account of its excellent hotel and the salubrity of its atmosphere.

The valley at Matucana is a wide bottom land supporting a considerable town. Here come droves of the pretty little llamas, from the inner sierra, with their burdens for the railroad; and here are seen pure specimens of the Quichuan from the sierra and puna as well. These beings, always gentle but solemn and taciturn, avoiding traffic with the whites, have never forgotten nor forgiven the subjugation of their ancestors; to this day the women wear a garment in memory of their martyr Atahualpa, a long black apron with a white border that passes under the left arm from the middle of the person in front to the middle of the back. From Matucana to Quebrada negra, 1 mile along the main valley,

there is a rise of 700 feet accomplished by developing distance in a lateral valley, while in the next 4 miles the road ascends 2,000 feet and crosses two bridges traversing the Rimac and two switch-backs. San Mateo, $78\frac{1}{2}$ miles from Callao, is another important mountain town, presenting much the same features of life that are met in Matucana, while 2 miles beyond the line crosses the Rimac in a narrow gorge, "the Infernillo" (hell), the cliffs of which reach hundreds of feet toward the sky and shut out the light of day. A half mile farther, at Cacray, the severity of the ascent is such that a double switch back has been found necessary to place the line at a height permitting its farther advance. Seven miles beyond this point, at Chicla, 87 miles from Callao and 12,215 feet above the sea, is the terminus of the Oroya Railroad, as left by Henry Meiggs. Trains have been running to Chicla, and no farther, since 1877, but the line had been graded to the oroya in the time of Meiggs. The road has now been completed under the Grace contract, and is in operation to the oroya, the limit of the original contract. An "oroya" is a cable and boatswain's chair used in Peru for crossing streams that can not be forded; it is used here to designate such a point on the Jauja River, that, flowing out of the little lake Chanchoycoc, and running 150 miles southeast, breaks through a deep canyon of the Central Cordillera, where it joins the Apurimac and with it flows into the upper Amazon. A settlement of exchange and barter, an Indian market town, has grown up at the oroya, which is about 30 miles south of the lake. Ninety-five miles from Callao and 13,606 feet above sea level, is the railroad station of the Casapalca gold and silver mines, worked by two enterprising Americans, who, having built up a good manufacturing business in Lima, which they sold for a snug fortune to an English syndicate, have now developed a mining industry at Casapalca, and which by the completion of the railroad line has become a profitable enterprise. Eleven miles beyond Casapalca is the summit tunnel already mentioned, from

which the line descends to the valley of the Jauja, reaching its terminus, 12,178 feet above sea level, at the distance of $136\frac{1}{4}$ miles from the coast.

It is contemplated to continue the Oroya line to the Cerro de Pasco mines at the northern end of Lake Chanchoycoc, and 70 miles northwest from the oroya. Surveys already mentioned have also been made for the "Oriental Railroad" to the head waters of the Amazon.

Telegraphs and telephones are in general use throughout Peru for the transmission of news and business communications. The long-distance telephone is almost exclusively used, and has largely superseded the telegraph, having been introduced in the northern department on the most extensive scale by Mr. Emilio Clark, of Piura, where he has already put up 800 miles, and is extending the ramifications in every direction, the advantage being keenly appreciated by the planters of that favored district of the State, who have thus put themselves into close communication with all the rest of the country.

The coast of Peru is traversed by a submarine cable, which connects every important port with the rest of the world.

The tariff of prices for the use of these various improvements, keeping in mind that the Peruvian sol is worth 72 cents of the gold dollar of the United States and is divided into 100 cents, is as follows: on the railroads, first-class passage, 5 cents per mile (Peruvian money); second, $2\frac{1}{2}$ cents; freight, 16 cents per ton per mile. Telegraph messages are sent for almost precisely the same prices that obtain in the United States; telephone rates in Lima and the south are also like those in the United States, while in the north they are about one-half. Hacks in Lima cost less than in the northern cities of the United States, but are not so cheap as in England; fifty cents an hour is considered a fair price, but one may make almost any bargain with a hackman, if he possesses a fair allowance of *savoir-faire*. Rates of postage are still high,

it costing 10 cents to send a letter to any part of the Republic outside of the department in which it is mailed, and 5 cents within said department, but Peru is in the Postal Union and enjoys cheap foreign postage.

Owing to the exorbitant rates of railroad freight, a great deal of the transportation of the country is still done with donkeys and mules on trails alongside the steam lines. Until of late fuel for steam locomotion has been very expensive, and at times difficult to procure. But the successful development of petroleum wells has solved the question of cheap fuel, and it is now being introduced on the various lines of the Republic.

Lima is lighted by electricity, of which the plant, being of the Thomson-Houston type, is the property of the gas company, which has supplied to the streets of the city 50 arc lights and 3,000 incandescent lamps. The system has taken well among private citizens for stores, theaters, halls, and private houses. Callao is about adopting similar improvements.

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Chapter IV.

AGRICULTURAL CONDITION — SUGAR, RUM, COTTON, RAMIE, WINES, RICE, DOMESTIC ANIMALS, ALFALFA, POTATOES, GRAIN, COCA, CACAO, HIDES AND SKINS, TOBACCO, FRUITS AND VEGETABLES, COFFEE, CINCHONA, RUBBER, WOOLEN MANUFACTURES.

When war broke out between Peru and Chile, Peru could boast of possessing at Lurifco and Palo Seco the heaviest sugar-producing plant in the world. Lurifco, being the property of an American citizen who knew how to protect his rights in such a way that even a pirate would find it expedient to respect them, escaped destruction while the property of Palo Seco was laid in ruins. Sugar is cultivated in all the valleys of the Zona Seca, beginning at the extreme north of the Republic and extending to the valley of the Chincha, south of Lima. The best sugar machinery in the country was built at Philadelphia, but some has been brought from Europe. All the sugar estates are connected by railroads with the ports of the coast.

When Chile declared war against Peru the value of sugar produced had risen from \$432,000 in 1859, to \$6,528,000, of which by far the greater portion was taken by England. The production was almost destroyed by the poverty resulting from the war, but has already risen to a figure that promises for Peru the position of being one of the foremost sugar-producing countries of the world, being at this time \$6,000,000 and advancing.

Rum distillation follows naturally as an important industry of the sugar estate. The product is used largely for cooking fuel in a country where fuel is required for no other purpose.

Cotton is the principal article of export from the port of Paita in the north, as Piura is the center of its production and preparation for the market. This industry has had a steady growth ever since it began to attract serious attention in 1862, when 3,362 quintals were sent to Liverpool by way of experiment. The American civil war created a demand for the article, and the price rose to 38 cents a pound. In 1864 the exportation had risen to more than 41,000 quintals, and has since then fluctuated with the ability of the cotton region to produce a crop. This ability depends on the occurrence of floods, which are expected once in seven years, and irrigate a narrow section along the margin of the River Piura, while they inundate the whole valley of the Chira and the Tumbez farther north. These floods secure planting, which bears a crop in the same year and two crops a year for two years thereafter; in all, five good crops, of which the first and fifth are light, the second and fourth excellent, and the third of extraordinary abundance.

All the cotton of the Department of Piura is classed as "rough Peruvian," but in fact there is a considerable difference between the character of cotton raised in the valley of the Rio Piura and that raised in the other valleys. And this character can not be produced nor preserved in other situations from the same seed for reasons that seem to depend on the peculiarity of climate. The Piura staple is long, like all the Peruvian article, but it has a texture assimilating it so closely to wool that it has been called "vegetable wool," it is soiral and is used by the woollen manufacturers in the manufacture of ladies' fine merino underwear and fine hosiery. Its use has been extended in the American market in proportion as it has been possible to procure it.

Up to 1884 the exports of this singular cotton had been confined to the Liverpool market, although it had been shipped thence to New York. But in 1885 Messrs. F. Hilbek & Co. sent a small venture to New York, and the direct importation to

this country has continually increased. So great has become the demand for the article among our manufacturers that in spite of the enormous cotton crop of our Southern States in 1890-91 we imported 19,300 quintals of the Peruvian article, from Liverpool in great part, although the production of that year in the Piura Valley was only 15,000 quintals.

During the first three months of 1892 there were imported into New York, direct from Piura, 8,886 quintals, and the importation continues in an increasing ratio. The present prospect is that the United States will soon require more than is produced. There is good reason for this. The cotton of Piura does not enter into competition with American cotton, since it is not used for any purpose for which cotton is in demand, but to supersede the more expensive article of wool. Nor can it be rated a deleterious compound, since it adds to the luster of the goods, their strength, and ability to resist shrinking, while it makes them softer and in every sense more luxurious.

In the year ending June 30, 1891, the United States imported from Liverpool 1,500,000 pounds of Peruvian cotton. It ranged in price, where purchased, from 11 cents to 20 cents a pound. As an illustration of comparative values of the various classes of cotton in these importations we may take two shipments, noted in the official report of Consul Sherman, March 16, 1892, forwarded respectively by the houses named:

Cost per pound in Liverpool.

	Cents.
Bushby, Son & Beasley, sending—	
Peruvian	20
Brazilian	13
Red Sea	15½
Chinese.....	10½
F. Zerega, sending—	
Peruvian	18
Egyptian.....	14
Surat	5½
East Indian	5

The cotton plant of Peru is a beautiful object, containing, all at one time, the flower, green boll, and open cotton ready for gathering. It is not planted annually, like the cotton of the North American States, but once put into the ground is left until a new septennial flood brings a new inspiration of life, when the old plant is pulled out and a hole dug with a spade, into which the new seed is dropped and left until in its own good time it is again ready for picking. This seed has been taken to other regions which it was thought offered better advantages of soil, but every attempt of the kind to raise the extraordinary class of cotton peculiar to Piura has proven only failure.

Within the year 1892 a new discovery in Peruvian cotton has been developed. There had long grown in the valley of the Piura River a unique variety of the article, supposed to be useless for exportation. It is a tan color of various shades, from a light café au lait to a decided brown, rather dark, and always delicate. Separated from the seed, the almost universal verdict would declare the article to be a beautifully fine wool. Hitherto this colored cotton has been used only by the lower class of native Indians for the manufacture of their heavier ponchos. About a year ago, however, an invoice was sent to Liverpool, and the result has been extraordinary. An experimental shipment was also sent to California and answer received that the woolen mills of that State could absorb all that could be raised. It has created a furore among woolen men, who find in it the most perfect imitation of wool that has yet been produced, requiring no dyeing to prepare it for a popular color in underwear and hosiery. In the English market where it has been sold it has commanded 2 cents a pound more than other cottons, except the North American sea island. The Government of Peru has given a valuable concession of irrigation rights to an American engineer, who made the surveys of such a system several years ago, and who is now engaged in the United States in raising capital for the construction of such a work, with fair prospect of success. Cotton of

other varieties are raised all along the coast of Peru. It is of a longer staple than the ordinary fiber of the United States, but can hardly be compared in length or fineness with the "sea-island" cotton of the northern coast, which finds its principal use in the adulteration of silks of French manufacture. The American cotton gin is the favorite wherever cotton is raised in Peru.

Ramie has lately been made the subject of a successful experiment in raising and preparation for market, by Señor Penillos, on his hacienda of La Legua, in the vicinity of Lima. Forty acres were first planted, with such results that in a second planting the area has been doubled. The plant gives four or five crops a year of 10 tons clear fiber to the acre per annum, for which he was offered £28 to £30 per ton. The preparation of the fiber was on an imperfect machine of home manufacture, which is to be superseded by an imported affair of improved type. Mr. Clark, curator of the Royal Botanic Garden of Ceylon, who examined the production of Señor Penillos, says of it in his report to the Peruvian Corporation of London: "It was the finest sample of this valuable fiber plant that I have ever seen. It measured $9\frac{3}{4}$ feet long, and had the appearance of having been cut too soon for commercial purposes."

The vine, at Moquegua and Ica, produces a grape that ranks among the finest in the world; the wine of Moquegua is superb, approaching fine port in its fruity bouquet, delicacy of taste, and inspiring quality of life. The vine also prospers in all the region below the puna, though best in the coast departments named. There, also are made those famous liquors that have found high favor of late years among the punch lovers of the United States, the white brandies, known as Italia, Moscatel, and Pisco. These liquors are packed in large earthen jars, in shape like an enormous carrot, holding from an aroba (25 pounds) to a quintal. Red wines are transported in the same way. White wines are extensively made and are moved in bottles. Malt liquors are made

and used in the country and will be treated of under the head of manufactures. It seems expedient to allude to them in this place since the reference to liquors will excite an inquiry for them. The exports of wines and liquors during 1890 amounted to \$500,000.

Rice is raised in all the coast valleys from the extreme north to 60 leagues south of Lima. But the most extensive rice fields are in the valley of Ferreñafe, at the north. Although the rice crop of the country is enormous, the greater portion of it is consumed at home, the exports of any one year not exceeding \$400,000, principally to Chile, Ecuador, and Colombia. It is a staple article of diet with all classes of Peruvians, and finds voracious consumers among the Chinese population.

The domestic animals of civilized Europe have been naturalized in Peru. Horses, asses, cattle, sheep, goats, pigs, chickens, and pigeons are found in abundance all over the country, the return made by Philip II of Spain for the precious wealth of which he had drained the colony and for the inestimable gifts of maize, potatoes, tobacco, cassava, ipecacuanha, quinine, and many precious trees and fruits. Horses came with the original conquerors, and asses arrived at Cuzco in 1557, when the breeding of mules began. Garcilaso de la Vega declares that he saw bullocks at the plow near Cuzco as early as 1550, and in 1559 the price of cows had fallen to 6 ducats. The other domestic animals were introduced within twenty years after the Conquest, and rapidly multiplied under the benign influence of the Peruvian climate.

Alfalfa is grown throughout the coast region where it is possible to procure water for irrigation. It bears four crops a year, and with the bean of the algaroba constitutes the chief food of the herbivorous domestic animals. Alfalfa is cut in the evening and delivered in the early morning at the door of the customer in the towns. It is also dried as hay and exported in bundles to the capital from along the coast.

Potatoes grow luxuriantly in all parts of the Republic and do exceptionally well in the sierra, where they are indigenous, while in the puna they are almost the sole crop that can be depended on to sustain the life of people who inhabit those dreary regions.

Wheat is peculiarly the crop of the sierra, although the supply of flour has never yet been sufficient for the home consumption, owing to lack of transportation facilities. The method of treating the wheat crop illustrates the style of farming as well as the cheapness of labor in the sierra. At the wheat farms in the mountains the crop, after being made into sheaves, is carried to the great house of the planter to be prepared for the mill. This preparation consists of two operations, by the first of which the finest wheat is separated, kernel by kernel, from the stalk by the men, women, and children, peons of the farm, who do the work seated on the pavement of the courtyard around a great sheet of domestic cotton cloth. After this the straw is trodden out by the feet of mules or horses, and the remaining wheat thus freed is a second quality, sold at a lower price than the carefully picked article. This is thrashing wheat in the sierra, where men receive two or three dollars a month for wages, and live by borrowing enough from the patron to keep them and their families alive and secure them to the service of the planter, who has a claim on their bodies until the debt is paid, which is never accomplished in this world.

Wheat was introduced into Peru by an accident, of which the heroine was the first European woman who landed in the country. Inez Muñoz was the wife of Alcantara, half brother of Pizarro, and shortly after her arrival received from friends in Spain a present of a barrel of rice. One day while she was cleaning some to make a pudding for her brother-in-law, the Marquis, she came across a few grains of wheat, which she carefully laid aside and afterwards planted in her little garden on the northwest corner of the grand plaza of Lima. They yielded abundantly, and the little crop was used as seed in a replanting. This was in 1535,

and in 1539 the wheat had multiplied so rapidly that the first flour mill in Peru was erected. In 1543 wheaten bread was sold at $2\frac{1}{2}$ pounds the real, of $12\frac{1}{2}$ cents. Barley, oats, and alfalfa were soon afterwards introduced. In 1560 the same lady, having meanwhile become a widow, married a Spaniard who had brought over some olive trees, which were planted in the same little garden, but all of which died except two, one of which was stolen by a Chilean and became the parent of all the olive trees in Chile, while the other has similarly been the progenitor of all the olives of Peru.

Barley is raised in the sierra, but never ripens.

Maize grows everywhere in Peru except in the higher parts of the puna. In the valleys two crops a year are raised and constitute the staple food of the Indian population, as well as the base for the national drink, called chicha, which was offered to Pizarro in golden goblets by the aboriginal natives in the Bay of Paíta, when he first entered Peruvian waters. The great chieftain drank the beverage, smacked his lips over it, and saying "Es mui bueno," put the golden goblet into his alforjas and rode smilingly away. There are no more golden goblets; the sparkling chicha is taken from a little gourd and costs the most magnificent visitor a dime a drink.

Oats are cultivated to a very limited extent in the sierra for fodder; they are not made use of as food for man.

Cocoa, for the manufacture of chocolate, is extensively cultivated, the entire production being consumed at home, where it is regarded as greatly superior to the imported article. It has not yet become an article of export, since other products of the country yield so much greater profit that cocoa is only raised in the vicinity of towns that afford a ready market, with little cost of transportation.

Coca, the wonderful plant of which the drug cocaine is made, grows wild in many parts of Peru, and is cultivated to some extent. The exportations are yet small, amounting to about 15,000,000 pounds, principally to England and Germany. A

favorite place for its cultivation is in the valleys of eastern Peru, though it grows luxuriantly wherever it is planted on the Pacific Coast, the truth being that, like cocoa, the superior returns of other crops has left little encouragement for its cultivation in that region.

Wool is a principal object of industry in Peru, the exports amounting to \$5,000,000 a year, the main centers of production being in the sierra, where sheep ranches contain 100,000 head.

Goatskins are annually exported from the northern department to the amount of \$300,000, all of which reach the United States.

Hides are raised in the foothills of the sierra, and are largely taken by France, though a small part of the shipment finds a market in the United States and England, the total exportation being worth something more than \$300,000.

The city of Lima is largely supplied with beef from this northern department, the deficit being made up from plantations south of the capital.

Tobacco is raised with great facility, but is not yet regarded as of equal importance with sugar and cotton. All that is raised is consumed in the country, and much is imported. The cigar industry employs a good many men in the interior towns, the tobacco being generally smoked in paper "cigaritos," which are the constant companion of the Peruvian gentleman all over the Republic.

Fruit and vegetables are annually exported to the amount of about \$200,000, and consist of paltas (alligator pears), oranges, granadillas, chiramoyas, mangoes, camotes (sweet potatoes), onions, and, indeed, every kind of fruit and vegetable known to the tropics, which are generally sent to Lima. The historian Markham declares the Peruvian fruit preserves to be the finest in the world.

Coffee, which demands a high altitude in Central America and on the Atlantic coast, grows of a superior quality on the lowlands

of the Pacific coast of Peru, and on this account is an exception to a general law. The reason for this, however, appears plain, when we recall the conditions of climate previously mentioned in treating of the causes of the mild atmosphere on that coast. It is not tropical, but subtropical. The temperature is that of the lands 3,000 feet above the sea in Central America, and is saturated with a similar amount of moisture. A difference in favor of the Peruvian situation is found in the superior dryness of the atmosphere at night, which in Central America rather severely cools the plant, retards its maturity, and prevents the full development of its flavor. The coffee of the plantation Guadalupe, near Pacasmayo, sells for \$50 the quintal at the plantation. Mr. Blacker, the English consul at Paita, planted coffee in the valley of the Chira, where he could give it irrigation, and succeeded in raising an excellent article, but his estate was carried away by a flood when he had considered his experiment a success. In the valley of the Piura River, which is about to receive the blessings of irrigation, the ability to produce a superior article of coffee has created some wonderful expectations on the part of coffee planters who know the region.

No coffee is exported from Peru, the supply not being equal to the home demand.

Cinchona (Peruvian bark) is not now a considerable item in the productions of Peru, though it is indigenous there. But the neglect and abuse of trees in the effort for more rapid returns of investment has allowed a promising industry, for which the soil and climate are peculiarly fitted, to fall into decay, from which it will be rescued only by the new blood of colonization which is now turning to those favored shores.

Caoutchouc, or india rubber, as we call it, is the chief export from the forests of the montaña, whence it is carried by way of the Amazon and its tributaries by the same path, and gathered by the same class of labor, the Indians of the mountain forest.

Sarsaparilla, ivory nuts, medical roots and dyewoods are exported to Germany, France, and in lesser quantities to England, with some small amount to the United States.

Manufacturing, as successful business enterprise, was found impossible in Peru until the Government came to the protection of capital with a high tariff on certain importations, with which the country had been flooded from abroad, while abundantly able to produce them.

Petroleum exists in immense deposits in all the coast districts, but it was not possible to put on the market an article that in fineness of quality would compete with the American importation, because capital found fields in which the risk of competition was vastly less. Finally, however, at the urgent demand of the struggling industry, a protective tax was put on the imported article, which until then had been selling at the modest price of \$1 per gallon, but fell immediately to one-half that sum, to the great dismay of the owners of the oil wells. But the oil was there, and investigation showed that Peru possesses the reserve deposits of the world. The attention of English capitalists was called to the facts, and under a pledge that the protection should be continued, a company was formed in England which has invested a capital of \$1,250,000 at Talára, in the extreme north of Peru, and on the ocean beach, so that their tank ships can anchor within 200 yards of the reservoirs for loading, and they are now supplying the South American Pacific coast market with kerosene of the highest grade. Their product is sold at retail in the well-known square tin can of 5 gallons, at 25 cents (Peruvian, or $18\frac{1}{2}$ cents American money) the gallon, while the American is held at nearly double that sum. The result is the rapid disappearance of the American article from the Peruvian market, where indeed it has no reason to be.

Lard has recently been made the subject of governmental protection, for while the country is well adapted to its production, the

United States, possessing the market, furnished the article at so low a figure as to completely discourage the industry. In 1890 a heavy duty was put upon imported lard, which it is hoped will encourage the home manufacture. Lard is a staple article of diet among the poor, and every poor man in the Republic, outside of the larger cities, may raise his own pigs and make his own lard if he desires.

Furniture is not extensively manufactured, although a good deal of an expensive character is made in the country by small mechanics, who work without machinery and in very hard woods. The objection to the American material is the facility with which the white ant goes through it. It is possible, however, to prepare the softest woods so as to be offensive to the insect without impairing their usefulness.

The question of cheap furniture is so intimately connected with the progress of civilization as to merit more consideration than has generally been given it, a fact recognized by some of the most intelligent and philanthropic of Peru's citizens. At the present time the poorer classes are almost entirely destitute of everything that looks like furniture. The North American mechanic and laborer can have comfortably furnished quarters at trifling cost. A set of chamber furniture that cost \$20 in the United States, and makes a pretty room wherever it is placed, can not be bought in Peru for less than \$100 to \$150. A black-walnut table, worth \$3, is appraised in the custom-house at \$75, and then an ad valorem duty of 33 per cent is applied to it. The result is that no considerable market exists for such expensive goods.

Liquor manufacture is an important industry in Peru—alcohols, wines, brandies and malt liquors. An English company has lately invested a large amount in a brewery in Lima, established in 1880 by two Americans. Under the impulse of enlarged capital it has developed an enormous traffic, and exports its famous beer to all South American ports. It has been declared by com-

petent physicians to be better adapted to the climate than any of the foreign makes.

Olive oil is made in great abundance in the vine-growing districts, where the olive seems to be the companion of the grape. It is shipped from Pisco, Mollendo, and other ports south of Lima, to Callao, where it is decanted into small packages for shipment abroad.

Alpaca wool was manufactured into cloth in the days of the Spanish domination; when considerable factories existed for the purpose, and in the ancient reign of the Incas the natives of Peru dressed in garments of alpaca and vicuña wool, manufactured by their own hands into yarns and fabrics of varying degrees of fineness. Now, however, this class of wool is all exported, the first shipment having been made in 1835, when a few bundles of alpaca wool were sent to Liverpool as a sample. A Bradford manufacturer recognized the great value of the article, entered largely into its importation, and made an immense fortune.

The alpaca is peculiar to Peru. It is a beautiful animal, standing 6 feet high, nearly half its height being made up of the long, graceful neck. It has very large black eyes, and in color is black or tan, and often of the two colors oddly mixed. When the alpaca lamb is a year old the wool is a foot long, and soft and fine as silk. The alpaca wool industry has never passed out of the hands of the aboriginal Indians. They still have their flocks on the pampas of Umabamba, along the eastern shore of Lake Titicaca, and sell directly to the merchants. What they do with the immense sums of money they receive in this trade it is impossible to guess.

Father Cabrera, a priest of Carabaya, succeeded in breeding a cross of the alpaca with the beautiful vicuña, producing a delicate animal with long, silken, white wool. At his death he was possessor of a small flock of these pretty creatures, but they were allowed to die out for want of attention.

The alpaca wool exported from Peru in a single year amounts to 4,000,000 pounds, worth about \$2,000,000.

Straw hats are manufactured in the city of Catacaos and its suburbs to the value of \$800,000 a year. Lesser quantities are made in Eten and some other towns. The truth is, however, that no "straw" whatever enters into their make, but a marsh reed imported from Ecuador. It is put up in small bundles, in which the various sizes are kept distinct, so that the hat maker does no culling. The coarser reeds make the ordinary "Panama hat," which may be bought for \$5 in the New York market.

These hats receive their name from the fact that formerly they were taken in small lots from the ports where they were bought by steamboat officers and stewards, and sold by them to the merchants of Panama, who shipped them to Cuba, Jamaica, Puerto Rico, Colombia, and Chile. While in Peru this industry is largely confined to Catacaos, it thrives in many parts of Ecuador and Colombia. The purchasing merchant along the coast can tell by inspection where any "Panama" hat was made by the local characteristic of the plaiting. Some of the reeds are as fine as silk thread, and are wrought into remarkably fine hats that sell in England for fancy prices of from £20 to even £100. The Prince of Wales had one of these exquisitely fine hats, so flexible it could be folded to carry in his vest pocket without injury. Such a hat would be made by contract, as are all of the finer classes, requiring the moonlight nights of three months, perhaps longer. The reeds must not be exposed to the daylight, since it would dry and harden them, destroying the flexibility so essential to their beauty, nor must they be exposed to the light of lamp or candle because of the presence of flying insects that would stain or bite them.

Bridles and halters of great luxury, woven by the Indians of the sierra, are much affected by riders who make any pretense to elegance. They are of the finest goatskin, cut into shreds no

larger than what is known as "fine mending yarn," and are plaited around a small cord. Bands of silver, ornament the lines and every part of the work at such intervals that a single well-made bridle will contain 100 pieces. They are soft and pleasant to the hand on account of their great flexibility and the consciousness that you are holding pure silver between your fingers.

Saddles adapted to long rides in a desert or among steep mountain trails are made in the country and very few of any sort are imported from abroad, while none are exported, the affair being solely adapted to Peru. The stirrups accompanying these saddles are of wood, fanciful in shape, and ornate. In riding the saddle is covered with an enormous rug, called a "colchon," the middle section of which, made of leather, fits the seat of the saddle, while the sides, covered with a long wool and more than two feet wide, reaches to the stirrup; they do certainly make a comfortable seat for a long ride, but one is fain to suffer in sympathy with the animal which is carrying this extra load of 40 to 50 pounds, drenching him in a reeking perspiration.

Miscellaneous manufactures are of various classes; thus, of chemicals, drugs and dyestuffs Peru exports annually to the amount of \$7,500,000, of which by far the greater part is nearly equally divided between France and England, while the little trifle of \$100,000 goes to the United States.

Metals in bars and ingots are exported annually, in great part to Europe, generally to France and Germany; of gold, to the value of \$20,000; of silver, \$3,000,000; of lead, \$20,000; of copper, \$1,600,000. None of this goes to the United States, except as coin.

Chapter V.

MINERALS AND MINES—DISTRIBUTION OF GOLD, SILVER, COPPER, LEAD, COAL, TIN AND OTHER METALS—THE PETROLEUM WELLS.

Ever since the world first heard the story of Peru the simple mention of its name has been sufficient to conjure up visions of gold and silver and precious stones and fragrant woods. The ransom of Atahualpa, a large room piled with the most elaborately wrought ornaments and utensils of gold and silver as high as a man could reach, and the stories, not fabulous, of the immense treasure sent to the Spanish monarchs, their share of the productions of that wonderful country, where the people were gentle and beautiful, and fell readily into the manners of their conquerors; the strange refinement of that ancient civilization, where the divine light led every citizen into the paths of industry and virtue, where there was no poverty and no man was richer than his neighbor; every line, indeed, that has come to us of Peru has led us to think of the country as the center of health, wealth, and happiness, a little nearer paradise than any other land. Nor has this wonderful dream passed away from the hopes and faith of men. At the present time Peru is the object of more enterprise and substantial investment for the purpose of developing its well-proven natural resources than any other country on this Western Continent.

Gold is found in every part of Peru. In the maritime Andes, where the rocks are of a crystalline character, gold is found in veins of quartz, which are intruded into the granite and syenite.

This auriferous quartz is accompanied by oxide of iron and mica, which present very considerable variations. It is also often accompanied by other minerals, as carbonate of lime of a laminar structure, and limonite of a resinous appearance. It is sometimes discerned in copper minerals and in those mixed with chalk, copper pyrites, malachite, alacamite and silicate of copper. In the aqueous deposits of the sierra, veins of gold are found not only in crystalline earths, but also in metamorphic rocks, such as quartzite and slaty schist, intruding themselves into the sedimentary and eruptive formations. In these veins the gold is in a pure state, as well as in pyrites, sulphuret of iron, and other metallic sulphurets, more or less auriferous, copper pyrites, panabase, bournonite, galena, jamesonite, etc. In all the Andean ranges gold is found in veins and threads, and in the alluvial districts of the puna in flakes and grains, deposits known in the language of the country as "rebosaderos" (overflow pockets), "aventaderos" (wind drifts), and "lavederos" (washing). In the montaña, gold is usually found in quartz veins injected into talc and clay-slate by the upheaval of crystalline rocks. This quartz is white, though occasionally exhibiting oxide of iron, but not in the same abundance as in the coast district. It sometimes shows grains of mispickel or arsenical pyrites. In the valleys of some of the streams at the head of the Amazon a great number of nuggets have been found.

The scope of this work will not allow a fully detailed statement of the auriferous wealth of Peru. But beginning in the extreme north and proceeding southward, a brief exhibit only is presented of the gold deposits in the Republic.

Department of Loreto.—Several gold workings exist in the Province of Alto Amazonas, between Pongo de Manseriche and the Rio Huallaga. They have been worked more than two centuries, with occasional interruptions from the savages, who in 1857 destroyed the villages.

In 1867 Capt. Mariano Vargas visited these washings and expressed his surprise at their marvelous richness; many persons are now engaged there in gold washing with great profit. Abundance of gold is carried down the Rio Napo, in the sands, which the Indians wash in troughs.

Department of Amazonas.—The principal gold field in this district is in the province of Luya, 2 leagues south of the village of St. Thomas and the town of Chachapoyas. The vein of the "Chuyurco" hill is called the Reo, from its traversing the gorge of that name, and is 2,500 feet long, varying from 1 to 6 inches in thickness. Another vein, called the Hovaluena, is from 12 to 20 inches thick. The yield is variable in these lodes, running from half an ounce to 5 ounces to the ton. There is a rich confluence of the Rio Nieva and the Marañon, but being in possession of hostile savages, they have not been much worked. At the mouth of a gorge of the Marañon, in the vicinity of the village of Balsas, the sands of the river contain gold of good quality.

Department of Piura.—The gold bed of Hualcarumi is in the gorge of the stream, 3 leagues north of Ayabaca, the chief town of the province of Ayabaca. It is in alluvial drift, resting on crystalline and porphyritic rock. Professor Oleachea says it is in fine dust and grains the size of a small pea, and cleans up an ounce to the ton. Another gold mine in the district of Frias, in the province of Ayabaca, is a prolific vein intruded into syenite.

Department of Cajamarca.—In the province of Jaen, close to the village of San Ignacio, is a rich deposit of gold which can not be worked for want of water. Two leagues farther to the southwest are the rich sands of the Rio Chicipe, not worked for want of local conveniences in the way of roads, and chance for procuring supplies. Near the village of Assuncion the gold bed of Capan is found, with iron pyrites, pyrites of copper, and magnetic iron. The pyrites show 5 to 13 ounces of gold per ton.

One league from Capan are the mines of Chirinpata, some of which have been extensively worked. In these mines veins of peroxide of iron alternate with carbonate of lime of laminar structure, with specks of pyrites, etc. These works have in times past produced enormous quantities of the precious metal.

Department of Libertad.—In the Cerro del Toro, near the town of Huamachuco, are veins of talcose clay in which the presence of gold is plainly discernible. Some of the workings here have been remunerative. The richness of one mine gained for it the name of San Francisco de California. Sulphuret of lead veins are associated with the gold. In the province of Pataz, in the southern districts, are some of the richest gold fields of Peru. The towns of Pataz, Parcoy, and Tayabamba, are really built upon gold beds, for after a heavy rain the mud deposits contain grains of gold, called by the natives “astillas,” and weighing a half ounce. Mouths of shafts exist in the above, but they are almost wholly in disuse. The gold is in quartz intruded into syenitic rock. The slope of Jembonhalf, a league north of Pataz, is rich in auriferous veins. The Polvadera has yielded as much as from half an ounce to 18 ounces of gold to the ton. The vein is a quartz and talcose clay. The ridge of Sarumilla, 1 league north of Pataz, contains a number of veins, the gold being found in peroxide of iron, which yields a half ounce of gold to the ton. The town of Parcoy is in the midst of gold mines which have fallen into disuse. Important gold deposits are those of the hill of Puyhuanchito, half a league north-northeast of the town of Parcoy; the ridge of Chinchal, north-northeast of the town of the same name, and near by, in the Puyhan Grande, are the mines of Gallinero and Corrito Blanco, both extremely productive. Near these is the mine of Tajo, where the auriferous soil is thrown upon a turf, in which, by washing, it deposits its gold, to be found every fortnight by raising the turf. The mine of Gigante, also in the same vicinity, is highly productive. As much as a pound of gold

to 125 pounds of earth has been taken from this mine. At the same place gold is found in pyrites at the rate of 3 ounces to the ton. Gold is found at the mouth of the Rio Cajas in grains of auriferous quartz mixed with ferruginous soil for a distance of 4 leagues along the right bank. In these deposits a nugget weighing 5 ounces has been found, while nuggets of 2 ounces are not of rare occurrence. On the right bank of the Cajas several streams fall into the river, bringing down sands of gold from the slopes.

A gold field has recently been found in the interior, 3 leagues from the port of Salavery, where the gold is found in quartz, associated with oxide of iron, and has yielded, according to late analyses, 3 ounces of gold to the ton, with 30 ounces of silver and 20 of lead. At the mines of Zalpo there are both gold and silver. Gold is found in quartz, accompanied by chloride of silver, limonite and oxide of manganese. Experiments show good results in both gold and silver; in the district of Viru and province of Truxillo are veins of auriferous quartz with limestone and talc, producing a half ounce to the ton.

Department of Ancachs.—In the valley are auriferous sands, where gold is found in small grains, much more plentiful below the mouth of the Chsygoran tributary. A specimen from this stream yielded 2 ounces to the ton. The mines of San Cristobal de Uchusinga, northeast of the village of Uco, show one-quarter ounce of gold to the ton. In the same district are other mines on the other side of the ridge of San Cristobal, known as the Minamayhua, Chinchuragra, and Pucaragra. The minerals are of alluvial origin, resting on calcareous deposits, with ammonites which belong to the cretaceous formation; the gold is found in flakes and nuggets. Near the mouth of the Rio Santa lie the mines of Janca; the mineral is ferruginous quartz, and the ridge is micaceous syenite; the gold is argentiferous, the yield containing $1\frac{1}{2}$ ounces of gold and 3 of silver to the ton. Mines opened

at Chuquia proved to be of little value and were abandoned. In the district and province of Huaylas are several mines, not very productive of the precious metal, though specimens vary from one-quarter of an ounce to 2 ounces to the ton. The mine of Quilla, near Casma, yields 2 ounces of gold to the ton. The gold beds of Pamplona yield lead as well as gold. There are many other mines in the department which produce gold in combination with silver, lead, and copper.

Department of Huanuco.—The River Marañon divides the town of Chuquibamba, which in times past has been known for its gold washings; they are now, however, abandoned by all but a few Indians, whose washings produce but insignificant results. Auriferous soil has been found on the left bank of the Marañon at a spot called Rain; as yet there has been no attempt to work it. At the Boca del Sapo, near Huallanca, the yield from a quartzose rock is an ounce to the ton. At Mamayaco the veins are productive, and near by are veins containing copper and gold. In Chinchas are mines not now being worked that yield $1\frac{3}{4}$ ounces to the ton. Important washings are to be found in the gorge of the Cayumba, an affluent of the Huallaga; tradition gives fabulous accounts of the riches of these deposits. Auriferous mineral is universal in this department, the ore, composed of pyrites, azurite, argentiferous panabase, etc., often yielding as much as $1\frac{1}{8}$ ounces of gold to the ton.

Department of Junin.—The gold here is of vastly less importance than the silver; it exists in almost imperceptible quantities in all the streams that flow into and form the Perené. The gold mines of Cerro de Pasco yield gold averaging from 1 ounce to $1\frac{2}{3}$ ounces to the ton. In many of the mines the gold is so intimately mixed with silver as to seriously impair its value. Auriferous quartz is found in the province of Tarma; gold is found in the argentiferous ore of the province of Yauli.

Department of Lima.—Gold is encountered in all the gorges of this department, running down to the sea. In the immediate

vicinity of the capital, gold has been found in many localities, but the yield is not of any great account. Between Lima and Ancon, also in the Province of Canta, gold has been found to yield from one-tenth to a half ounce per ton. In the Province of Chancay some mines were worked in former times, but are now abandoned.

Department of Ica.—Near the town of Ica gold is found in various minerals, compact iron ore, metamorphic slate, and hematite; it is also found in the copper mines of Ica.

Department of Huancavelica.—Though not an auriferous district, gold is found in several localities. In the ridge of Poteoche, near the town of Huancavelica, are mines of gold, silver, and copper; the ore yields 1 ounce of gold to the ton. The mines of Julcani are of silver, but high up in the central ridge lie the gold deposits of Corihuacta, and gold is visible in porous quartz. Gold is also found in the silver mines of Lircay, but only in the higher parts of the ridge. What are known as the “gold mines of Coris” have been but little explored, but the assays have given promising results.

Department of Ayacucho.—Numerous gold mines, worked in this department in former times, are now abandoned; of 41 old mines only 2, those of Chaipi and the Luicho Hills, are now in operation. The Chaipi mines, said by tradition to have been 30 in number, show a proportion of a little more than an ounce to the ton. The mines of this district have been generally abandoned on account of the inundation of water, from which no suitable means of freeing them has yet been devised. The mines are so rich as to induce the belief that in the near future they will be reached by the modern improvements in machinery and once more add their wealth to the general store. The climate is temperate and salubrious, and the mines are near the port of Chala. The valleys of Simariba and Ancon, in provinces of the same name, are auriferous, but the superstition of the

Indians, who believe that to take gold out of the ground would ruin their crops, has thus far prevented their being worked.

Department of Cuzco.—The Province of Paucartambo is doubtless the region from which the Incas extracted their immense stores of the precious metal. Gold here is almost always found in quartz; small veins, often very rich, run through the slate, which is the predominant rock. The rich Huiscapata mine has been drowned out and abandoned after expensive attempts to save its precious stores; it must wait the advent of the engineer. The Carhuays gold mine, on the right bank of the Ocongate, near the town of that name, is the only mine in the Paucartambo district in permanent working order. The lode of auriferous quartz runs almost horizontally in a northwest direction, and is from 8 to 10 inches thick. The works take care of only about 50 pounds of ore daily, from which they secure 5 ounces of gold. Several of these mines can not be worked on account of the infiltration of water. At Uama are not only diggings but veins of auriferous quartz, which show gold of 23 carats. Gold has also been found in the beds of the little streams falling into the Mapacho. A mine in the Clalca district, 4 leagues from Paucartambo, on the bank of the Churo River, was opened under promising auspices, but was shut by a landslip and the work abandoned. The gold diggings of the Paucartambo montaña are very rich so far as they have been explored. The Indians work the sand in troughs, and barter the proceeds for their supplies. The Cerro Carnante mines have been practically stopped by reason of earthquakes and landslips. The gold mines of the Chumbivilcas Province are near the Cordoray range, in the Colquemavaca district, from which 50 pounds of the purest metal have been washed in a twelvemonth.

Department of Apurimac.—Gold digging at Huayllaripa is carried on in the most primitive and wasteful manner, and yet it is the exclusive occupation of the people. The gold is of a bright yellow color and perfectly pure. The gold diggings of Ayahuaya,

in the Province of Antobamba, have been only worked by a few Indians, who take out about 250 ounces a year, a fact indicating the results that would be gained by the application of modern methods. Several streams roll down much auriferous sand, but the region is uninhabited on account of severe cold, due to its great altitude.

Department of Arequipa.—This is the richest department of Peru, resting on an unbroken stratum of auriferous ore. The Palamadera mines, less than a league from Huayllura, are 12,600 feet above sea level and yield about $5\frac{1}{2}$ ounces of gold to the ton. The Montesclaros gold mines are in the hands of a national company, backed by English capital, and it is understood that good results have been produced by the improved methods introduced. Numerous other gold mines exist and are worked by private enterprise, but little is known of their locality on account of the difficulty of communication in an almost uninhabited country. The Picha gold mine, on the right bank of the Cota-huasi, 2 leagues from Chacana, gives $1\frac{1}{2}$ ounces of gold and 20 of silver to the ton, lead being prevalent to the extent of 50 per cent. The Huanzo mines, near Antobamba, in the Huaynacota district, are abandoned on account of the landslides. But the ore is limonite, containing native gold, almost pure, and when the Indians venture near it is washed in troughs. An advance in methods will bring these mines into use again. The Department of Arequipa contains many other mines, nearly all of which are now idle.

Department of Puno.—Only two provinces, Carabaya and Sandia, contain gold deposits of importance so far as known. They are on the furthest southern boundary of Peru, and are separated from the rest of the Republic by the high ridge of snow peaks, Illimani and Sorata. The mines of Carabaya are declared by historians to be the origin of the Inca riches, among which is mentioned a nugget weighing 100 pounds, taken from the Inharaya ravine,

while another, shaped like a man's head, was seen by the historian Garcilaso. The gold mines of the Poto district, in the province of Sandia, lie on the southern slope of the eastern cordillera. They are near the village of Poto, and cover 3 leagues of ground. No large nuggets have been found, and work is extremely difficult on account of the scarcity of water, which has at last been procured at great expense from two lagoons, connected by aqueduct. The Ananea gold mines, in the same district, have been abandoned because of inundations. The Aporomo mines are four in number, the value of which is attested by a costly road, constructed through a difficult region, and an aqueduct 6 miles long through the solid rock. They have ceased to be remunerative. The Challuma diggings were discovered in 1859 by cascarilla hunters, who found these deposits in the bed of the stream on whose banks they were seeking the quinia tree. The news spread, and a considerable community sprang up in the vicinity, and has now become a prosperous settlement of commercial activity. Large nuggets have been found in the valley of the Pusupunco. The quality of the metal is very fine, ranging over 23 carats. On assay, the proportions are: Gold, 96.40; silver, 2.40; copper, 0.03; iron, 0.05; various, 0.22. In the Province of Carabaya the superficial soil seems traversed by veins of gold. Jauta is famous for the diggings of Mucumayo, where the nuggets attain considerable size; one has been mentioned that weighed 49 pounds. The Caasi district is unexplored, the Indians are very suspicious and unfriendly, so that the gold hunter enters the region at the peril of his life.

In conclusion, it may be said that the entire subsoil of Peru is an almost unbroken network of auriferous lodes. The obstacles to working them are in many places discouraging—want of water, inaccessible peaks, severe climate, and want of roads.

Silver mining is the greatest industry of Peru. Like copper, it is found in its greatest abundance in the maritime Andes, but

requires for its development better roads than now exist. The lack of this convenience and want of capital has led to the abandonment of many and important deposits, so that, while there are really 2,000 silver mines already opened in Peru, a comparatively small number are being worked. It is destined, however, to a speedy advance, due to the opening of the Oroya line and the attention directed toward the Cerro de Pasco mines. Those of Hualguayoc, near Cajamarca, have been made famous by Humboldt's attention, who declares that they had yielded in thirty years the value of 32,000,000 piasters, or more than \$33,000,000.

Silver abounds in the valley of the Rio Santa, near Carhuaz, Huaraz, and Recuay. A railroad had been built up this valley a distance of 120 kilometers, when an unprecedented cataclysm destroyed nearly every vestige of it. The coast section, communicating with the port of Chimbote and four important sugar plantations, has been put in operation, but beyond this 30 miles nothing has been done to repair the line. It will bring coal and silver mines into close connection with a market when it is opened to Recuay.

Cerro de Pasco is a great mining district, with 360 silver mines open and at work. The method of separating the precious metal from its ore is still primitive, and the region awaits the arrival of the railroad line connecting it with the port to introduce the improved methods of modern art. Local railroad lines connect the mines with each other and with the principal office of the enterprises.

There is a famous mine at the Cerro de Pasco, from which the Spanish conquerors secured great booty. It was drowned out and abandoned. This mine was conceded to Mr. Henry Meiggs, and at his death was left, with other contracts, to the charge of his executor, Mr. Charles Watson, who, with the consent of President Iglesias, transferred it to Mr. Grace, the agent of the Peruvian Corporation. The concession had lapsed, however, by failure to complete within

the designated limit of time, and when the constitutional Congress took the matter in hand they declared it forfeited. Negotiations have since been reopened, in which the Congress has demanded a more liberal share of the proceeds for the use of the Government than the Peruvian Corporation has yet been willing to concede. To get any useful result from this mine it will be necessary to run a tunnel from a point on ground lower than the bottom of the drowned shaft. This tunnel had been pushed a considerable distance when Mr. Meiggs died. The Peruvian Congress claims the right under the original contract to enjoy the advantage of what is thus far done. The concessionaire insists that such treatment would be unfair. In 1877 the Cerro de Pasco mines produced 1,427,592 ounces of silver.

Farther south, at Yauli, there are 225 silver mines in operation, 1 of cinnabar, and 9 of coal. Still farther south, in the Province of Huarochiri, there are 117 silver mines being worked. In Huancaavelica and Castro Vireyna there are 54 silver mines, owned principally by parties who are operating the mines above named; also 4 cinnabar mines, which, after a season of abandonment, are once more taken in hand. In Cialloma, a province of Arequipa, there are 24 silver mines in full swing of successful operation. The silver mines of Puno have been famous ever since the days of Salcedo and the viceroy, Count of Lemos. There are more than 50, among them the old mine of Laycayota, the original discovery of Salcedo. The mines of the Patara Silver-Lead Company furnish a fine galena ore, which is found profitable to transport on mules to a point in the Santa Valley, from whence it is transported more than 30 miles by railroad to the sea at Chimbote, after having been brought from an elevation of 10,000 feet above the ocean level, in the region of Macate, on the coast range. From the port this ore is sent to Swansea for smelting. The enterprise has been prosecuted for more than twenty years.

Lead is of course a profitable industry where there is so much silver. Some veins of galena contain silver enough to pay all

the expenses of mining. The Patara mines, above named, are an example of this; the lead, like the copper and tin produced, is consumed in great part in the country, the exportation in bars, being only about \$20,000 a year in addition to the ore shipped abroad for smelting.

Copper is found in Cajamarca and Recuay. There are also copper mines owned and worked by an American on the coast near Acari. Cinnabar has been mentioned in treating of silver. It exists in the sierra, and probably in Huancavelica and Ayacucho. Pure quicksilver is brought into Paita by Indians for shipment to Europe; but where it is found has not yet been learned by the whites, as the Indians have thus far proved their superiors in tact and secretiveness.

Tin is found in the gold deposits of Peru, but as yet in no great amount. About \$200,000 measures the annual value of exportation in ore, and less than half that amount in bars and other manufactures. Sulphur of extraordinary richness, analyzing 99 per cent in purity, is found at Tumbes, in the northern borders of the Republic, and at Arequipa, in the southern cordillera. It does not figure in the exports, being retained in the country, where a considerable part of the production is consumed in the manufacture of powder, an explosive which has been made contraband because of the existence of its components, sulphur and nitre, in the Republic; the Government holds the monopoly of its manufacture.

Gypsum is found all over the coast desert of the northern department of Peru, and is in universal demand for the outside and inside finish of all classes of edifices, churches, theaters, private residences, and walls inclosing gardens and cemeteries. Limestone (carbonate of lime) is found all over the country in localities so near each other that no difficulty is experienced in procuring whatever is required for the building purposes of the population.

Coal is distributed generously in the coast range and in the sierra. It has not yet been determined if any continuous vein of commercial value exists, the truth being that the volcanic upheavals of the country have so disturbed the coal deposits that, after sometimes working for several hundred feet what appears a coal vein of excellent combustible quality, it suddenly disappears, and only superhuman power can find it again. The coal of the Santa Valley is called by the experts who have examined it "semi-anthracite." With the anthracite luster, it contains a good deal of bitumen.

Salt is an important article of commerce and exportation. The deposits of Huacho and Sechura are inexhaustible, since they are in a continual state of re-formation by the percolations of saline waters through a porous rock at some elevation above the level of the sea, where the mineral is deposited in masses, and is taken out in blocks about 15 inches square and 8 inches thick for transportation. Wells sunk in the region about Piura will always encounter strongly impregnated water at a depth of 25 to 30 feet, even in close propinquity to the river. There is a well at the Piura terminus of the Catacaos railroad, 26 feet deep, sunk to secure water for the use of that line. Although but 100 feet from the river bank, it has been necessary to abandon it and run a pipe to and under the sands of that stream for the proper quality of water. Mr. Emilio Clark, the enterprising American consul at Piura, sunk a well in the grand plaza to obtain water for the plants under his charge in that garden, and had the same experience at the same depth; but driving down 100 meters, he found good, potable water, which has risen each year nearer and nearer the surface, until now he is able to raise it with an ordinary suction pump. It is esteemed by citizens for domestic purposes.

Asphaltum has been mined for more than a century in the region of Amotape, on the Rio Chira. Petroleum bids fair to be a source of immense wealth to Peru, compensating for the loss

of her guano and nitrate deposits, unless it should form a new temptation to the greed of capitalists and lead to another conquest by which her extensive fields shall be taken from her as were the nitrate beds.

The first experiments at refining petroleum were made on an article taken from the asphaltum beds of Mancora and Zorritos. As a result, a wealthy commercial house established extensive works at Negritos, from the well of which the oil rose to a height of 70 feet above the ground, the unexpected flow being lost for want of tanks to hold it. The house of Thorne also made unsuccessful attempts to develop the refining business, but encountered only disaster. The industry was therefore abandoned for a time. In 1876 a wealthy kerosene manufacturer of Pennsylvania arrived in Tumbes and sunk a well 500 feet deep, from which the oil spouted forth in great abundance. He asked for a concession of the entire petroleum district, and, on the refusal of the Peruvian Government to grant his petition, abandoned the project.

So far as yet investigated, the petroleum beds of Piura cover an area of 16,000 square miles; but, however, as there is an area of 30,000 square miles of precisely the same geological character, it is easy to believe that petroleum will be found under that entire area. In the southern part of the department, near Sechura, the petroleum is found with natural gas, so that a new source of wealth seems opening to that region, already the richest in agricultural resources and minerals of Peru. Mr. Frederic Moreno, of Lima, has published a pamphlet on the petroleum deposits of Peru which is thoroughly exhaustive of the subject, and, moreover, embraces a comparative analysis of the petroleum enterprises and prospects of the world. The book is an invaluable cyclopedia for all students and for business men interested in petroleum.

The work of drilling wells in the Piura fields, according to Engineer Warren, who was sent out to investigate the subject, is easy, on account of the soft strata through which they pass,

as follows: first, at the surface, a layer of sand from 1 to 4 meters thick; then a layer of white sandstone, a half meter to 2 meters thick; third, a layer of wet sand of 8 or 10 meters; fourth, a conglomerate of decomposed carbonate of lime, formed by the aggregation of sea shell; fifth, slate impregnated with oil, through the fissures of which the oil and gas escape.

The wells are from 200 to 500 feet deep, but rarely exceed 350 feet. Dr. Salathe, in a report dated at Titusville, March 31, 1885, says: "The crude oil of Peru differs essentially from the petroleum of Pennsylvania. All the light products that are distilled at a temperature of 10 to 15 degrees, Celsius, are distinguished by a very agreeable odor, while the light oils of Pennsylvania have a detestable odor, making it necessary to deodorize them. The precipitate that is formed when a sufficient quantity of acid has been added is not black, as it is in our Pennsylvania oils. The acid gives a reddish-brown color, proving that there is not the same quantity of tar in Peruvian oils as exists in ours.

"The lubricating oils that I have separated are distinguished by the absence of paraffin, which is never missing in the Pennsylvania oils, a fact making it difficult to obtain good lubricating oils from them. Samples have been exposed to a very low temperature without becoming solidified, merely acquiring the consistency of sirup. Such a property gives a great value to these heavy oils, assimilating them to the lubricating oils of Russia, which are esteemed the best in the world for the purpose. After distillation the residuum is like asphaltum, and may be used for the paving of streets. If it is not desired to get asphaltum, the distillation may be continued and there will result a coke, an excellent combustible, leaving no ashes and giving a high temperature."

Dr. Rufus S. Merrill, of Boston, says the oil is the finest brilliant petroleum he has ever seen. He calls the Negritos oil "an aromatic petroleum."

Two large plants have been established in that extensive country for refining petroleum and producing kerosene, the greater

part of which is consumed in Ecuador, Peru, Bolivia and Chile. Señor Faustino G. Piaggio, of Lima, was the first man to erect a first-class establishment of this kind in South America; he was also the first to defy the formidable competition of the North American article, which till then had monopolized the Peruvian market. His production at Zorritos, 20 miles south of Tumbes, has received premiums at several European exhibitions and the gold medal at the Exposition of Berlin in 1884. He has sunk 11 wells and is provided with all the modern apparatus for procuring and distilling the petroleum; he sends 60,000 gallons a month to the markets of the coast. The other establishment for refining petroleum is that of the London and Pacific Petroleum Company, Limited, the refining works being located at Talára, on the coast, known formerly as Pariñas, a point 52 miles north of Paita. This company has an invested capital of £250,000, and does the refining for the Negritos wells, of which there are 11 at a distance from the parent plant of 7 miles; they send their crude oil through a pipe to Talara, where 3 stills are now at work, having a capacity of 4,000 gallons a day, while several more are in course of construction.

Kerosene has been successfully tested on the Oroya Railroad line for locomotive fuel, and is being applied to all the engines of the company. The large tank steamer of the Talara works is run with this class of fuel, and when the total absence of wood and the high price of coal is understood, it is not surprising that a fuel so cheap and accessible should find a ready and extensive market on the desert coast of the Zona Seca.

Peru is now manufacturing about 200,000 gallons of kerosene per month, and is constantly increasing the capacity of manufacture. The product is of superior quality, and is driving the American article out of the markets of the Pacific.

Chapter VI.

CONCESSIONS FOR PUBLIC WORKS.

For the purpose of exciting capital to enterprise, and also of attracting it from abroad, Peru has been accustomed to granting favorable concessions to those willing to undertake the development of works of public improvement. These concessions carry with them an obligation to build the works and the right to enjoy the profits of them under certain conditions. The contractor deposits a bond with the Government as a pledge of his intention to proceed with the construction which is the subject of the agreement. Generally a concession, to be effective, must be ratified by a constitutional congress; but that body has clothed the Executive with the right in certain cases to grant concessions for the public benefit. It has also established a code of mining laws, compliance with which conveys all the privileges that a special concession would confer. The Congress of 1891 authorized the Supreme Government to make concessions in accordance with the terms of certain contracts already made. This exceedingly wise provision in the interest of agriculture promises to Peru the highest development of which the country is susceptible in the class of wealth that gives the most stable foundation to the State.

Drinking water for the port of Paita has long been a desideratum; in 1889 a concession was granted to Mr. Edward Fowkes, an enterprising American living in Paita. The supply must be brought from the Rio Chira, a distance of 21 miles, across an almost level pampa, to which it will be raised

300 feet above the level of the sea, and, on reaching the edge of the port will fall again to its level at the sea. By descending the Chira and going around the bluff the distance will be increased to about 30 miles, but will be nearly a level route, making high pumping unnecessary. There are about 5,000 people in Paita to be supplied, who now pay by the gallon for every drop of water they consume. A considerable source of revenue will be the shipping of the port, which is the most important of Peru after Callao, yielding one-third of all the revenues of the State from commerce. Several large steamers enter Paita every week, and will take in their water supply there on account of its quality and the cheapness with which it can be sold. The failure of the Barings paralyzed the enterprise, as it was being placed on the London bourse.

Three separate concessions have been given to secure the blessings of irrigation for the fertile valleys of the northern department, the Tumbes, Chira, and the Piura.

The Tumbes is the most northern river on the Pacific. The fertility of its lands may be judged by the fact that Pizarro found them supporting a population of 80,000. The present system of cultivation, without irrigation, is conducted by only 5,000 people. The valley is peculiarly adapted to tobacco, though sugar also does well, but demands more capital. Irrigation will bring a large territory under subjection that is now lying waste for want of the water which flows by it in abundance to the sea, and is lost.

The Rio Chira is the second important stream on the coast, and the one navigable river of Peru. The valley is much more extensive than that of the Tumbes, and contains a population of 20,000. It is adapted to the cultivation of every nameable crop, but those most in favor at present are cotton, sugar, and tobacco. Some indigo and cochineal are also produced, while it is the garden of all classes of fruits and vegetables that are demanded by the tables of Lima. The Chira flows into the Bay of Paita, and is thus

accessible to all the shipping of the coast by water, while the Paita and Piura railroad runs along the valley a distance of 20 miles.

The third river, counting from the north, is the Piura, the valley of which was selected by Pizarro, as the site of his first capital, which he called, on account of its pure atmosphere, the City of San Miguel de Piura. The banks are too high to permit any extensive inundation during the septennial floods, but where they have been thus wet the result has been extraordinary in amount of production. The population of the valley is 62,000, but when the floods come, once in seven years, thousands of the younger men, who have left the valley for work in the towns along the coast and in Ecuador, return to the old home and devote themselves to farming, the favorite pursuit of the Peruvian Indian. This migratory element in the labor of the region has produced a very independent class of laborers in northern Peru; they bring money into the district and an unusual degree of ingenuity, combined with physical ability and industry.

The development of the agriculture of the north has been considered so essential to the prosperity of Peru that some extremely advantageous provisions have been incorporated in the concessions relating to the region. Thus the work is declared to be for the public weal, and therefore every landowner whose land is accessible to the waters of irrigation must pay the water rent, whether he take the water or not. The land and crops, also all capital invested in the estate, are made security for the payment of rents and may be seized for it. An equitable arrangement has been devised by which the fertile lands of the pampas may be "expropriated" by paying a nominal price.

The concession for the valley of the Piura contains a provision, that when the water of that river has been exhausted the company may take water from the Chira for reinforcing the former. It also provides for water-supply systems for the cities. All the conces-

sions provide for selling water for domestic purposes, railroads, manufactures, and machinery; also for the establishment of water-supply systems in the different valleys.

These concessions are made by an act of Congress the base of a general authorization to the President to grant similar privileges to other parties.

A concession has been given for the construction of a railroad from the city of Piura to Morropon, a distance of about 100 miles. In this, as in all other concessions, the Government gives the right to import those articles necessary to the construction of the works without payment of custom-house duties.

Chapter VII.

POLITICAL DIVISIONS—CITIES AND TOWNS—GOVERNMENT AND CONSTITUTION—WEIGHTS AND MEASURES—CURRENCY.

The prime political divisions of the Republic are departments and littoral provinces. The departments are subdivided into provinces; these and the littoral provinces into districts. The executive and police power of the various divisions emanate more or less directly from the President of the Republic. Thus he appoints the prefects, who govern the departments and littoral provinces, and the subprefects, who, under the prefects, have charge in the provinces. The districts are under governors, who are nominated by the subprefects and appointed by the prefects, while the lieutenant-governors are nominated by the governors and appointed by the subprefects. All police functionaries charged with the duty of maintaining public order hold directly from the President.

There are eight departments and littoral provinces on the coast, which generally extend across the sierra to the central range, and contain the most important cities of the Republic. In addition to these are ten interior departments.

The coast departments are Piura, with an area of 14,000 square miles and a population of 136,000; Lambayeque, which covers 18,000 square miles and has a population of 86,000; Libertad, 16,000 square miles and a population of 148,000; Ancachs, 17,000 square miles and a population of 284,000; Lima, with the littoral Province of Callao, 15,000 square miles, the former with a population of 227,000, while Callao has 34,500; Arequipa, with an

area of 28,000 square miles and a population of 160,000; Moquegua, 22,500 square miles and a population of 28,000.

The principal towns of the department of Piura are Tumbes, with a population of 3,000; Paita, with 5,000, and Piura, capital of the department, with a population of 12,000, all in provinces of the same names; Catacaos, population, 25,000, in the province of Ayabaca; Sechura, population, 8,500, and Sullana, 7,000, in Huancabamba. In the eastern mountain district are the towns Morropon, population, 5,000; Tambo Grande, population, 8,000, and Chulucanas, population, 6,000.

Lambayeque is divided into three provinces, Lambayeque, Chiclayo, and Pacasmayo, of which the principal towns are Lambayeque, population, 6,000; Chiclayo, population, 14,000, and Ferriñafe, population, 8,000.

Libertad contains four provinces, Truxillo, of which the capital is Truxillo, population, 8,000; Otuzco, Huamachuco, and Pataz.

Ancachs embraces seven provinces, Santa, with the town of Santa, population, 3,000; Pallasca, having Samanco, population, 2,000; Pomabamba, its town Huarmey, population, 1,500; Huaraz, with the town Huaraz, population, 8,000; Huaylas, its town Huaylas, population, 6,000; Huari, and Cajartambo. In the sierra are the important towns of Caraz, population, 6,000, and Carhuaz, population, 5,000.

Lima contains the capital of the Republic, and is divided into six provinces, Chancay, in which the town of Ancon has a population of 3,000; Lima, in which is the capital, the city of Lima, population, 102,000; also the towns of Chorillos, population, 15,000; Miraflores, population, 6,000, and Barranca, population, 5,000; all suburbs of the capital. The remaining provinces are Cañete, Canta, Huarochiri, and Jauja. The town of Huanavelica, in the sierra, has a population of 8,000.

Callao is a littoral province, embracing only the city of Callao, with a population of 34,500.

Ica is another littoral province of two provinces, Chincha and Ica. Arequipa contains seven provinces, Arequipa, of which the principal town has the same name and a population of 35,000; Camana, Islay, Unión, Caylloma, Condesuyos, and Castilla.

Moquegua is divided into three provinces, Moquegua, Tacna, and Arica, of which the principal towns bear the same names, having, respectively, populations of 6,000, 10,000, and 30,000. The port of Arica is at present in the hands of the Chileans, in accordance with the terms of the treaty of peace. Its ultimate lot is to be determined by a plebiscite in 1894.

Besides these departments and provinces are the eight of the interior, as follows:

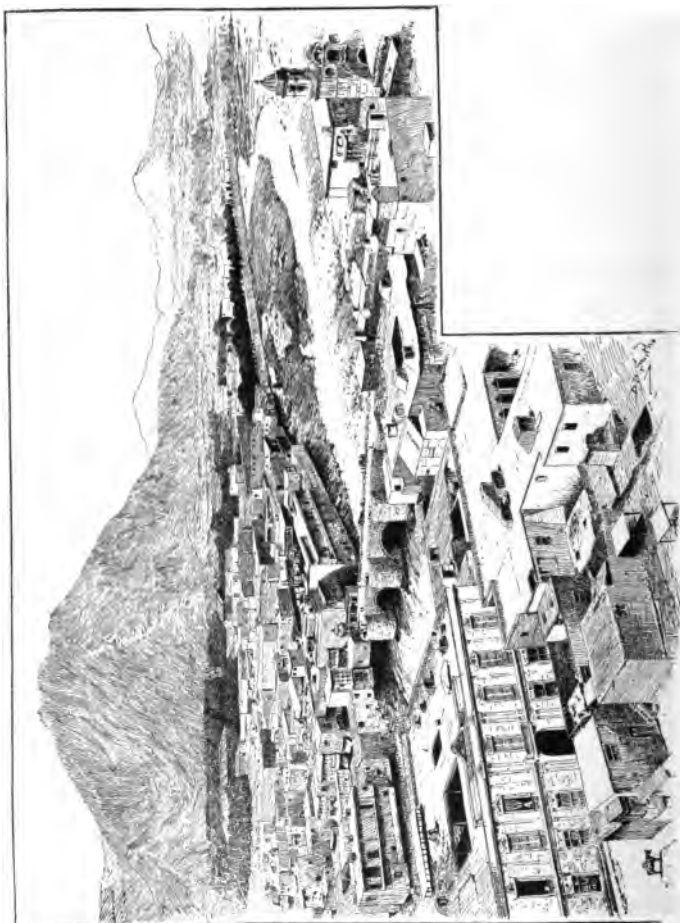
Cajamarca, with an area of 14,000 square miles and a population of 213,000, divided into seven provinces, Jaen, Chota, Hualgayoc, Celendin, Cajamarca, Contumaza, and Cajabamba, the principal towns being Cajamarca and Cajamarquilla, with populations, respectively, of 12,000 and 8,000.

Amazonas: Area, 14,000 square miles; population, 34,000. It is in three provinces, Bongara, Luya, and Chachapoyas; the principal town, Chachapoyas, has a population of 6,000.

Loreto: Area, 33,000 square miles; population, 61,000, contains four provinces, Alto-Amazonas, Bajo-Amazonas, Moyabamba, and Huallaga. The town Moyabamba has a population of 10,000.

Huanuco and Junin have together an area of 34,000 square miles; the population of Huanuco is 79,000, divided among three provinces, Huamalies, Dos de Mayo, and Huanuco. Junin contains a population of 210,000 in the provinces of Cerro de Pasco, Tarma, Jauja, and Huancayo. The principal towns: Tarma, population, 6,000; Jauja, population, 15,000; Pasco, population, 15,000.

Huancavelica: Area, 11,000 square miles; population, 104,000; contains the four provinces of Tayacaja, Huancavelica, Angares, and Castro-Vireyna. The capital, Huancavelica, has a population of 8,000.



LIMA.

Ayacucho: Area, 24,000 square miles; population, 142,000, contains six provinces, Huanta, La Mar, Ayacucho, Cangallo, Lucanas, and Parina-cochas. The capital, Ayacucho, has a population of 20,000.

Apurimac: Area, 62,000 square miles; population, 120,000; embraces five provinces, Andahuaylas, Abancay, Cotabambas, Aymaraes, and Antabamba. The principal towns are Andahuaylas and Abancay.

Cuzco is the largest department of the Republic, having an area of 96,000 square miles, with a population of 240,000. It contains twelve provinces, Convención, Urubamba, Talca, Paucartamba, Anta, Cuzco, Quispicanchi, Paruro, Acomayo, Chumbivilcas, Canas, and Canchis. The capital, Cuzco, has a population of 30,000.

Puno has an area of 40,000 square miles and a population of 260,000. It is divided into six provinces, Carabaya, Lampa, Azangaro, Huancane, Puno, and Chucuito. The principal towns are Puno, the capital, with a population of 6,000, and Chucuito, population, 5,000.

Thus the whole Republic has an area of about 464,000 square miles, and a population, according to the last census, of 2,622,000, not counting the savages of the montaña, who number to 300,000 more.

CITIES AND TOWNS.

Lima.—The foundation of the capital of Peru has already been noticed in the History of the Conquest. It remains only to sketch its present appearance and condition.

Few cities possess equal interest with Lima, the "City of the Kings," which at one time had no rival in wealth or importance in America except the City of Mexico. Its name is a corruption of the name of the river on whose banks it is built, 500 feet above sea level, and signifies "the noisy." The vulgarity of Pizarro and his companions may be recognized in his resolving the initial

"R" into "L," a habit still existing among the lower classes of Spaniards everywhere. Lima is popularly known as the Paris of America. Its women are beautiful, graceful, and intelligent. They have the singularly happy power of being both gay and dignified. The men are among the best educated and most extensively traveled on the continent. Its rank in theater and opera is of the highest order. Its diamonds are of the purest water, and it shares with New York the claim of being the greatest diamond market on the Western Hemisphere.

In architecture it is built on Moorish lines, decorated with the Italian's art and pencil. In color it is bright and gives a cheerful impression. It is as light as the sun, without being white. It is not easy to realize that you are looking on adobe walls when you are in a Lima street, but it is so. This style of construction admits of great facility in molding, and there being no rain it is enduring when covered with plaster of paris, with which the country abounds.

The lower stories of Lima houses are solid adobe walls from 2 to 4 feet in thickness. When it is necessary to add another story, which is not common with dwellings, the custom is to build with the light bamboo of Guayaquil, or scantling from the northwest coast of North America, which are treated with adobe and then stuccoed over with plaster, presenting a handsome finish. What appear to be massive towers are like bird cages, when robbed of their outer coat; this system of construction has been evolved from the experience with earthquakes. The massive wall answers to a certain height, but after that it must be succeeded by the lightest structure possible consistent with proper strength.

As in all Latin countries, the Lima house is built around a courtyard (patio), and while presenting a neat outside, even occasionally with some slight attempt at ornamentation, we must enter within the great gate to see the beauty of its architecture. A corridor and colonnade run around the patio and give excellent

opportunity for effect. This inclosure is also adorned with beautiful plants and occasionally a fountain.

The streets of Lima are generally paved with cobbles; but of late several experiments have been made to ascertain what is best for the climate and cash box. The sidewalks are too narrow for the comfort of pedestrians, and must eventually force an improvement more compatible with the demands of modern civilization.

According to a late census, Lima contained 102,000 inhabitants, living in 4,500 houses, with 14,209 doors. The University of San Marcos, founded in 1551, is the oldest college on the Western Continent, its charter having been granted by Charles V. Its curriculum includes jurisprudence, medicine, theology, and the sciences. The Lima School of Mines has an excellent reputation for thoroughness in teaching; its faculty includes Peruvians, French, and Germans.

There are in the Republic 1,177 primary schools, of which 813 are municipal, 333 private, and 31 are maintained by charitable or religious societies. Forty-eight thousand five hundred boys and 23,000 girls are enrolled on the lists, of whom more than 53,000 are in the public schools. The average attendance is 70 per cent of the enrollment; one-fifth of whom may be allotted to the capital.

Lima contains several valuable libraries; the National Library, founded in 1822, immediately after the establishment of independence, contained in 1880 more than 60,000 printed volumes and 8,000 manuscripts; it was reckoned by literary men who had visited it the best in Spanish America. When the Chileans had possession of Lima they destroyed the library, and immediately upon their evacuation of the capital the Peruvians set about its restoration. It was re-dedicated on the 28th of July, 1884, with nearly 28,000 volumes, which number has since been increased to about 40,000. The library of the University contains more than 20,000 volumes. There may also be mentioned the valuable scientific

library of the School of Mines, and the library of the national corps of engineers and architects at the national palace.

Lima contains an excellent system of waterworks, devised by a distinguished civil engineer, Mr. Ernest Mallinowski, who has made Peru his home for the last thirty years. In this design he availed of the sharp descent of the Rimac to go above the city and build a series of filtering galleries in brick under the bottom of the river, conducting the water in iron pipes by gravity to the distributing system. The result is that Lima is better supplied with baths and water-closets than Paris, while the system of sewerage is perfect, a constant stream of fresh water flowing through its whole extent.

The palace of Government and the cathedral have already received attention in the sketch of Pizarro's career. The cathedral, founded by the conqueror, cost \$600,000 and was ninety years in building. It is on the general plan that characterizes all Spanish ecclesiastical architecture. Its façade, like those of the other churches of Lima, has challenged the approval of severe critics.

There are in Lima 76 ecclesiastical edifices, some of which have been diverted from their original uses. Thus the railroad stations of the two lines that connect the capital with its port are suppressed convents. That used by the English company is the old house of San Juan de Dios, while the station of the American line is the Monastery of the Desamparados. Some of the nunneries have been turned into hospitals, where women, members of religious orders, are doing useful work as nurses; others into public buildings. The Government has enacted that any religious body reduced to less than eight persons shall cease to occupy a separate building and go into the house of some other order. The great bell of the cathedral, La Cantabaria, weighs 30,000 pounds, and is always tolled to sound the Trinity when an earthquake trembling is approaching. It is one of the heaviest bells in the world, and one may well imagine the solemnity of its awful tone in the

middle of the night when aroused from sleep by the terror of approaching destruction. The cathedral contains an original Murillo—La Veronica—a painting of ineffable beauty. It has also a chapel and altar devoted to Santa Rosa, the patron saint of Peru, and the only American who has ever been canonized. She was born and died in Lima.

The climate of Lima is not tropical, as one might suppose from its being within the torrid zone, latitude $12^{\circ} 2' 34''$ south, and longitude $77^{\circ} 7' 36''$ west from Greenwich. The law that was explained in connection with the northern part of the State obtains here, as it does throughout the Zona Seca. The result is an average temperature in summer (November to May) of 84° F. and in winter (May to November) of 56° F. While there is no rain during the winter months, there is a dense fog, known in the language of the country as "garua," which contains so much water as to make the streets muddy and the air uncomfortably raw and chilly.

There are several public squares in Lima, but nothing approaching a park as it is understood among North Americans, unless the garden of the Exposition may be so termed. The plaza, surrounded by the cathedral, the bishop's palace, the palace of Government, the city hall, and the mercantile arcades, called "portales," occupies, with the adjoining streets, about 9 acres. It is ornamented with a central fountain in bronze, surmounted by a statue of Fame, whose crown is 42 feet from the ground. The four seasons are represented by marble statues inclosed in little plats of plants that further illustrate the allegory. Twice a week two bands play in the plaza for evening entertainment. The ladies appear in evening dress, with their escorts, to enjoy the promenade. The Plaza de la Constitution (formerly de la Inquisition) contains a statue of Simon Bolivar, 14 feet high, cast in Munich, from a design by Adam Tadolini. The Paseo de los Descalsos, on the right bank of the Rimac, lies along the edge of

a suburban district, San Lazaro, and is 1,500 feet long; it is planted with trees, ornamented with vases and statuary, and provided with seats. The Alameda del Acho, on the same side of the Rimac, is a terrace along the river for half a mile or more, with paved walks and rows of tall willows, making leafy aisles that terminate in an open oval space, where is an allegorical monument to Columbus from the chisel of Salvatore Revelli, in which America is represented as a crouching Indian girl receiving a cross from the discoverer, while she drops an arrow, the symbol of savage life.

A great beauty of Lima is to be found in its public garden, which, although despoiled by the Chileans, remains the most beautiful and elaborate pleasure ground in Spanish America. Its principal gate is an exquisite work, and the grounds are made the sites of various palaces and pavilions, while all the zones of earth are represented in the flora. A magnificent conservatory of ferns and orchids was spared by the enemy, who carried away the zoological collection. The place contains about 40 acres, in which are pleasant shaded walks, seats, and gas lamps for evening entertainments. A small fee, 1 real, is asked for admission. Montero's famous picture of the obsequies of Atahualpa is to be seen in the principal palace, whence it was taken by the Chileans and afterwards returned.

No market in New York bears comparison with the "Central Market" of Lima, which is part of the suppressed convent of La Concepción; it is built around a central court, with exterior shops and interior corridors. The courtyard is traversed by paths radiating from a central fountain, forming a series of smaller courts, appropriated to special products. The market is better supplied with meats, vegetables, and fruits than any market in England, and compares favorably with the markets of the United States.

The camal (abattoir), the great slaughterhouse of Lima, is just outside and above the town, on the bank of the Rimac, where it

was built in 1855. The method of slaughter is much more humane than the system in general use in the United States. The animals stand with their heads locked between two posts, as cows are often placed for milking. Two rows of them face each other and leave room for the butchers to pass along the aisles between their heads. One carries a sharp, thin knife for his work; standing in front of the animal, with the knife upraised and carefully poised in exactly the true position, he suddenly, with a quick, strong blow, plunges it into the neck at the base of the brain, severing the spinal cord at that point and producing instant insensibility. The animal falls as if struck by lightning and immediately stiffens out, while another expert severs the jugular.

There are several hospitals in Lima. Probably the favorite among English-speaking foreigners is the French institution, under the charge of French Sisters of Mercy. The price for a separate room is 14 sols a week, equal to about \$10, and includes medical attendance, medicines, and food. The Refugio de San José is to an American a curious institution. Here the married woman may seek refuge from the cruel or wicked husband, and here the husband, who can not afford the price of a dispensation for divorce, may place his wayward or scolding and nagging wife, under a sentence of the archbishop, for discipline and religious training to improve her temper. Among the convents the principal are San Francisco, Las Descalzas (barefooted), Recoleta de San Diego, Santo Domingo, San Pedro, Nuestra Señora de la Merced, and San Agustín. Among the lesser priories may be named as important, the Monasterio de la Concepción, Santa Clara, Capuchinas de Santa María, Nazarenas, and Trinitarias Descalzas.

The public institutions of Lima, the charities, general cemetery, bull ring, cockpit, and lottery are all in charge of a society known as the "Benificencia," established in 1825, whose duty it is to so regulate them all as to best serve the popular demand and avoid scandal. The Benificencia is entirely outside of politics, and is

managed by the best citizens of the community. The Panteon General (general cemetery) was founded in 1808, and is one of the cemeteries in Spanish America that the civil power keeps in its own hands. There is a French cemetery and also an English one on the road between Callao and Lima, both of which are in excellent condition and are maintained, with characteristic national pride and taste, in monuments, foliage, and verdure. All the cemeteries about Lima contain monuments evincing wealth and taste. In the Peruvian cemetery it is not the general custom to put the body into the earth. Vaults are built above the ground, four or five stories high, and the coffins are slipped into them, being then sealed up with a marble slab, on which is the customary legend. A pretty chapel has been erected at the entrance of the Panteon General.

The penitentiary is a model institution of its class, having been designed by men of the highest character, after a visit to the best prisons of the United States and an elaborate study of the many systems of prison discipline. It is capacious, airy, clean, and secure; built on the principle established in the national constitution that imprisonment is not vindictive, but for reformation.

The shops of Lima are not so large as those of London or New York, but are exceedingly well supplied with everything to be found in the most luxurious marts. The jewelry shops are little stalls, and contain rich assortments of precious goods, generally of Parisian manufacture.

The newspaper press of Lima has always attracted the ambition of men of letters. In no country, therefore, does the press possess a more powerful influence and in no country is it more completely free. These facts account for each other. The principal dailies are *El Comercio*, the leading commercial sheet of Lima; *El Nacional*, *El Constitucional*, *El País*, and *La Opinión Nacional*. *El Perú Ilustrado* is an excellent and popular illustrated weekly.

Lima has two good hotels, the *Hotel de Francia y Inglaterra*

and the Hotel Maury, both of which are of cosmopolitan as well as metropolitan character. These houses supply table d'hôte and meals by card, as is preferred. There are several houses where rooms may be taken which do not supply meals; also, there are many excellent restaurants. Prices are reasonable; \$2 to \$3 a day will give the guest a very good room and table. The country towns of Peru make some provision for travelers, and where there is no hotel there is always a hospitable curate of the parish who may be relied on to save the stranger from discomfort and who will appreciate the visit of the agreeable passenger. In the interior cities the Italians and Chinese have undertaken very largely the office of boniface; they cook well and are cleanly and accommodating. They furnish clean beds and comfortable rooms.

Callao is the port of Lima, 7 miles distant, and is connected therewith by two lines of railroad. Its citadel was the last American possession to float the banner of Spain. The harbor is an open roadstead, but as there is never a storm in this part of the coast there is no need of further protection than is afforded by the island of San Lorenzo, on the southwest side of the anchorage, which serves as a breakwater against the swell of the ocean rolling up from that direction all along the coast. On the seaward side of San Lorenzo is a light-house.

Callao is in the sunshine when Lima is under a dense cloud of fog, and has on that account a vastly more agreeable climate in the winter than the capital, of which the temperature is 10° lower in that season. Callao is a handsome city of 30,000 people, and possesses as perfect a system for handling the cargoes of shipping as exists in the world. A mile of dock wall is traversed by 3 miles of railway track, provided with eighteen steam cranes, eight hydrants for supplying water to shipping, a light-house, and capstans that give to shipping all the facilities it can demand.

The boatmen who infest the harbor of Callao are licensed with the special privilege to pursue their calling, in return for which

they constitute the naval reserve of the Republic, subject to the call of their country at any hour. They are hardy, bold, industrious, and energetic in the pursuit of custom, in their clamor and push for a job resembling the hackmen at American railroad stations.

The Callao of to-day is half a mile north of the old city, which was submerged by a tidal wave in 1746.

There are three Roman Catholic churches and a Protestant chapel in the city, for, while the public teaching of Protestantism is prohibited by the law, the influence of liberal intelligence in the governing classes makes it a dead letter. Callao supports two clubs, four banks, and a hospital, as also several newspapers, of which the principal are *El Callao* and *El Porvenir*, this latter being printed in both English and Spanish.

After the Chilean war the headquarters of the Pacific Steam Navigation Company was transferred from Callao to Valparaiso, where English influence is paramount, and thus a considerable element of the prosperity of the port was lost. It meant the removal of foundries, machine and carpenter shops, flour mills, bakeries, and gas works, employing a large population of skilled workmen besides the necessary common labor. It has still, however, a large floating dock, 300 feet long, in which can be accommodated ships of heavy tonnage. English, French, and German steamers are engaged in the trade of the South Pacific, and enter the port every week on voyages that extend from European ports to Panama, and in the case of the Germans to Central America and Mexico. Sixteen hundred vessels a year enter and clear from Callao.

Paita, in the north, is the second port in importance in the Republic, collecting one-third of all its revenues from the custom-house duties. Its anchorage is excellent, in a perfectly landlocked bay. There is at Paita an iron custom-house, and the shops of the railroad connecting the port with Piura, the capital of the department, is one of the best equipped on the Pacific Coast.

The Government has contracted for an iron pier, which will be ready for use in the near future.

Paíta is a celebrated place of resort for the people of Ecuador, especially from the sickly valley of the Guayaquil River, in the warm months. The planters of the Tumbes Valley also come to Paíta in the same season. Its sea bathing is famed all over the region as a tonic to which convalescents are sent for the recuperation of their forces after the debilitating attacks of the pernicious fevers of the valleys of the north. The market of Paíta is of great abundance in meats, fruits, and vegetables, for which purpose it is eagerly sought by the navigators of the coast. The productions of Piura, Catacaos, and Sechura, also of the upper valley of the Rio Piura and the valley of the Chira, all find their principal port of export and entrepôt for supplies at Paíta. Some idea of the commerce of the port may be had by noting the exportations in one year, as follows:

Articles.	Quantity.	Value.
Cotton.....quintals..	60, 000	\$1, 200, 000
Panama hats.....kilograms..	26, 205	369, 092
Cotton seed.....do....	1, 600, 000	33, 000
Tobacco.....do....	309, 341	137, 443
Goatskins.....do....	233, 173	257, 811
Green hides.....do....	54, 590	26, 323
Coffee.....do....	20, 425	10, 990
Firewood.....do....	1, 262, 000	7, 773
Charcoal.....do....	3, 275, 553	50, 560
Cotton canvas.....do....	4, 172	2, 495
Cascarilla bark.....do....	29, 374	23, 570
Condurango.....do....	2, 746	578
Algaroba.....quintals..	10, 000	15, 000
Sechura salt.....do....		150, 000
Fat bees.....head..	*4, 000	136, 000
Asphaltum and other articles.....		150, 000
Total value of Paíta exports, including both coast-wise and foreign.....		2, 570, 595

* At \$34 each.

These articles are almost entirely from the valleys of the Chira and Piura rivers. They do not, however, include all the pro-

ductions of those regions, of which large shipments go from the Bay of Sechura and the port of Tumbes, besides the land exportations into Ecuador on the north. The business of the Paíta custom-house has grown with great uniformity since 1866, when the collections amounted to \$37,051, while in 1890 they were \$455,700. Paíta has two churches, two hotels, and two clubs.

Piura, the capital of the department of the same name, is on the Piura River, 42 miles inland and due east from its port. It was the first permanent settlement made by Pizarro after two unsuccessful attempts in the Tumbes and Chira, from both of which he was driven by the insalubrious climates. It is a well-built city of 12,000 people, a mercantile community, transacting the business of the northern valleys and southern Ecuador, containing a population of 150,000; the city has eight churches, one hospital, two clubs, two hotels, and two theaters.

The Plaza Mayor, in the middle of the city, is a beautifully cultivated garden, in the center of which is a marble statue of Liberty, while on the west side is a monument to the memory of Grau, the hero of the Huascar. On the south is the municipal building, containing the barracks for the troops of the department and a departmental prison. North of the plaza is the Iglesia Matriz (original church), while on the east is the Hospital de Belén. Piura is the great cotton mart of the north. Here representatives of American, German, and English houses have their establishments. There are several ginning houses in Piura and the vicinity.

Truxillo was founded in 1535 by Pizarro, in commemoration of his birthplace in Spain, for which it is named. It is a walled town, midway between Piura and Lima, and is a well-built, handsome city, regularly laid out, with wide streets crossing each other at right angles. The sewerage or open ditches run along the streets, reeking with the filth of the town. It is in latitude 8° south, and but little elevated above the sea, from which it is

25 miles distant. It boasts of possessing the finest private residence in South America. It is a cathedral town, with but little enterprise or life of any kind. The principal exports from Truxillo are rice and spices, and also the sugar of the Chicama Valley. Its port is Salavery, an open and rough roadstead. The original settlers of Truxillo were of very respectable Spanish families. "Yo soy Truxillano" means "I am from no mean stock."

All freight and passengers at Salavery are conveyed between the ship and shore in launches that carry from 50 to 100 tons at a load. The passenger takes the chance of being well deluged in going through the breakers. It is one of the most disagreeable ports in all its appointments on the coast of Peru, although it is the possessor of a fine iron mole.

Arequipa is the capital of the department of that name. It is 90 miles from the coast and 7,560 feet above sea level, with a population of 35,000. It is a cathedral town, of great wealth and influence. When built by the Spaniards the structures were of the most massive character, the walls being of stone, and even the roofs were stone arches; so that when a great earthquake shock struck the town it was thrown into utter destruction. Between 4,000 and 5,000 structures were thrown down, among them the cathedral and 21 other churches; it has been rebuilt in lighter material. Arequipa lies in the fertile valley of the Chile, at the foot of a snow-crowned volcano, the sublime Misti, which rises nearly 19,000 feet above sea level. It has been the residence of many very respectable statesmen of Peru and often the scene of ambitious plans for securing the Government, but without success. Its port is Mollendo, an open and disagreeable roadstead. It is connected with the coast by rail, which passes on to Puno, on Lake Titicaca.

Puno, capital of the Department of Puno, is on Lake Titicaca, 12,550 feet above sea level. It is a cathedral town, the sacred edifice being the highest cathedral in the world. The town owes

its existence to the discovery of silver in the mountains of Concharami and Laycaycota, at whose feet it was built in 1660. The mines now constitute but a small part of the industry of Puno, which is a great wool center.

It is a dreary place, with low thatched houses; the streets made more dreary still, if possible, by the noiseless tread of llamas and the presence of the silent, melancholy Indians.

Cuzco, signifying umbilicus or navel, was so named to designate it as the center of the Inca power. It is situated at the confluence of three rivers, the Rodadero, Huatenay, and Almodena, and is built around the triangle made by their junction, in latitude $13^{\circ} 31'$ south and longitude $72^{\circ} 2'$ west from Greenwich, at an altitude of 11,500 feet above sea level. The climate is not as cold as one might expect to find it after visiting other places in the sierra and puna of the same elevation, but is mild, equable, and salubrious. Wheat, barley, maize, and potatoes ripen in the valley, also the strawberry and peach. Within 20 miles of Cuzco are deep, hot valleys, where semitropical fruits abound. Cuzco is now the most populous department of Peru, though only about one-twelfth of its population is white, consisting of Government officers, wealthy hacendados, and merchants. Thus the appearance of the town is strikingly Indian. The stupendous ruins of the Inca age will forever make the city famous. The Temple of the Sun is probably the most imposing edifice in all America. Cuzco has its alameda on the south side of the town, planted with willows and provided with seats. It terminates in an esplanade, where are built a Grecian temple and colonnade. There are 60 churches in the city and 11 convents, of which several have been suppressed. The sewage is carried away in open ditches laid through the streets.

Caraz and Huaraz are important towns in the sierra, on the head waters of the Rio Santa. They are fair types of all the towns in that zone of the Republic—generally Indian in appearance,

with some slight admixture of whites to lead the enterprise of the region and its merchants. The houses are all well built and neat in external appearance, with smooth, whitened walls and spacious patios. On Sunday mornings the Indians make it a special duty to visit the snow mountains in their vicinity and bring down great blocks of ice, transported in a blanket hung on poles between two men or women. Recuay, farther up the valley, is the principal objective of the Chimbote railroad on account of its famous silver deposits.

Peru possesses settlements on the head waters of the Amazon, the most important of which are Iquitos, Nauta and Yurimaguas, this last being the port of the Italian colony, Moyabamba, a city of 1,500 souls, six days to the southwest. Nauta is on the Marañon, opposite the mouth of the Ucayali River. Iquitos is, however, the most thriving of all the towns in the montaña. It is on an elevated plain on the left bank of the Marañon, 60 miles above the mouth of the Napo. It has a population of 6,000 souls and contains extensive Government works for the manufacture of iron. Coal for the furnaces comes from England, the lignite on the banks of the Marañon being unfit for the purpose. It has a floating dock for vessels of 1,000 tons and is the military outpost of Peru, having a prefect of its own.

GOVERNMENT AND CONSTITUTION.

The government of Peru is popular and republican in its form. The executive power is vested in a President, elected to serve four years, with whom are elected also two Vice-Presidents, in the same manner and for the same time. The President can not be re-elected to serve two consecutive terms, but he may be re-elected when four years have elapsed since the expiration of his former term. The legislative power is vested in a Senate, and Chamber of Deputies, with whom alternates are elected, the custom having obtained in both bodies to give the alternates a chance in every

session to demonstrate their skill in statesmanship and gather in their share of glory, etc.

The judicial power is vested in a supreme court of justice, sitting in the capital of the Republic; superior courts in the Departments, judges of first instance in the Provinces, and justices of the peace in all the towns and villages. Judges of the supreme court and the attorney-general are elected by Congress from names submitted by the President. Judges and prosecuting attorneys of the superior courts are appointed by the President from names submitted by the supreme court. Judges of the first instance and their prosecuting attorneys are appointed by the judges of the superior courts in their respective departments. A vacancy occurring in the supreme court during a recess of Congress can be filled temporarily by the President.

All Peruvians, native or naturalized, who have attained the age of 21 years, and all married men, whether they have attained that age or not, enjoy the privileges of active citizenship. These exercise the right of suffrage if they can read and write, or are at the head of any workshops, or pay any public tax. The citizen is temporarily disfranchised by bankruptcy, imprisonment for crime, notorious gambling, vagrancy, or divorce by reason of his own fault. The right of citizenship is lost by judicial sentence under the following circumstances; bankruptcy found to be fraudulent by the court; acquiring citizenship in another country; accepting employment from another Government, or any decoration without the consent of Congress; by monastic profession, but recoverable on abandoning such profession; and slave dealing in any place whatever.

To be President one must be a Peruvian by birth; an active citizen, as above described; 35 years of age, and domiciled ten consecutive years in the Republic at the date of the election. The President is elected by a Congress, chosen by the people for that purpose; in the event of a tie vote in the Congress the result is determined by lot.

To be a Senator one must be a Peruvian by birth; an active citizen, as above described; 35 years of age; have an income of \$1,000 per year or have a scientific profession.

To be a Deputy the candidate must be a Peruvian by birth; an active citizen, as above described; a native of the department containing the province he is to represent, or a resident of it for three years; have an income of \$500, or belong to a scientific profession.

Senators are allotted, four to each department containing eight or more provinces; three to each department containing less than eight provinces and more than four; two to each department containing less than four provinces and more than one; one to each department of only one province, and also one to each littoral province.

Deputies are allotted, one to every 30,000 inhabitants and every fraction of that number exceeding 15,000; also one for each province, although its population does not reach 15,000.

No clergyman of any rank, no judge, nor any military officer can be elected a Senator or Deputy to represent the place where he holds or exercises authority.

Congress meets annually on the 28th of July, the independence day of Peru, and may remain in session ninety days. An extra session of Congress must adjourn as soon as the subject for which it was convoked is disposed of. It can not in any event remain in session more than forty-five days. The Chambers of Congress are renewed by thirds every two years, and both Senators and Deputies are eligible to re-election.

For the installation of Congress two-thirds of each Chamber must be present. Senators and Deputies are inviolable in the exercise of their functions. They can not be accused nor arrested for a month before or after the session of Congress unless taken in *flagrante delictu*, in which case they must be immediately placed at the disposition of their respective Chamber. The Presidency of Congress, in joint session of the two Houses, alternates

between the Presidents of the two Chambers. The impeachment of high officers of the Government must originate in the Deputies and be tried in the Senate. The Senate also decides questions that arise between the President and the supreme court and between the supreme and superior courts.

Laws may be initiated in Congress by the President and also by Senators and Deputies; and in judicial matters, by the judges of the supreme court. A law that has been vetoed by the President can not be considered again until a subsequent session of Congress.

Each Chamber elects its own presiding officer. The dispatch of public administration is in the charge of ministers of the State, who form the Cabinet of the President. Ministers must be Peruvians by birth and active citizens. The orders and decrees of the President must be signed by the minister whose portfolio it concerns, otherwise it is not to be executed. The meeting of the ministers forms a council for the President. The President and his ministers present to the Congress, when it meets, their respective reports touching the affairs of the Republic. The minister of finance also presents a report of the financial condition of the previous two years and an estimate for the budget for the ensuing two years. Ministers may present laws to Congress and be present to assist in the discussion of them, but must retire when the vote is taken. They may be called on by either Chamber to reply to interpellations.

Judges must conduct all trials of causes in public. They may discuss in secret, but their decisions must be given in public and be *viva voce*. Sentences and decisions must be accompanied with the reasons and a statement of the law on which they are based. Judgments by commission are forbidden. No power can transfer a pending suit to another power or authority, nor revive completed causes. Popular action may be taken against a judge for prevarication, bribery, abbreviation or suspension of judicial forms, and illegal proceedings against individual guaranties.

The nation professes the Roman Catholic faith and does not permit the exercise of any other in public. It is protected and its ministers are supported by the State.

The acts of any person usurping the duty of any public functionary are null.

No person can be arrested without the written warrant of a competent judge. All persons must be brought before the tribunal within twenty-four hours after arrest.

Prisons are places of detention, not of punishment. All severity not essential to secure keeping is forbidden.

The nation guarantees the diffusion of primary instruction to all its people and the encouragement of public establishments of science, art, piety and charity.

The introducers of a useful discovery or invention shall enjoy the advantages of such introduction for a time the limit of which shall be fixed by the proper authorities.

Naturalization of foreigners.—To become a citizen it is necessary for a man to be 21 years of age, reside in the country in the exercise of any office, industry, or profession, enter his name in the civil register before the municipal authority where he resides, and declare his intention to remain permanently a resident of the Republic.

Any foreigner may properly acquire property in the Republic, with the same rights and obligations as a Peruvian.

The domicile is inviolable, and can not be entered without the written warrant of a competent judge, which must first be shown.

Amendments to the constitution may be sanctioned in any ordinary Congress, but can not go into effect until they have been sanctioned by the succeeding Congress.

Currency.—There is no legalized paper currency in Peru, and therefore no banks of issue. The monetary unit is the silver sol, weighing 25 grams, and coined with the same degree of fineness (nine-tenths) that is observed in the silver coinage of the United

States. It will be observed that the Peruvian sol is a trifle lighter than the American silver dollar; this is due to the decimal system of weights, in consequence of which the sol is made to weigh an even fraction of 100 grams. As compared, the American dollar weighs $412\frac{1}{2}$ troy grains, while the 25 grams of the sol amount to 402 grains troy. The sol is divided into pesetas of 20 centavos each, and decimally into 10 reals of 10 centavos each. Medio-reals of 5 centavos are coined, as are also centavos, the last being some in copper and some in nickel. Gold coin is but little used in Peru; the gold inca, of 20 sols value, is a very handsome coin.

Weights and measures.—The Government has adopted the French metric system, but considerable use is still made of the old Spanish denominations, although nothing is legal except the metric system. Merchants of Lima buy by the meter, which is 3 inches longer than the English yard, and sell by the vara, which is 3 inches shorter. As this is a transition period among systems, there is apt to be confusion if the party interested fail to insist on the legal statement of measurement, in which case he can secure what he demands and is entitled to.

Chapter VIII.

TOTAL COMMERCE.

The riches of Peru have been the theme of fables. The name of the country stood for centuries as a synonym for wealth and extravagance, and in the pages of old romances, galleons were always sailing away from her ports laden with ingots of gold and silver to exchange for the luxuries of Europe and Cathay. But all this magnificence has departed, and the riches of the Republic proved to be the source of her greatest misfortune. First the accumulated treasures of the Incas tempted the cupidity of the Spanish Conquistadors; then the output of the mines, gained by the labor of the Indian, and the vast deposits of guano, gave the people luxury without toil; when deprived of these sources of wealth by the misfortunes of war, the country was left paralyzed and impoverished, and the foreign commerce has for years been in a condition of comparative stagnation.

The report of the commission that was sent from the United States to South America in 1884 and 1885 gives an accurate review of the condition of the commerce of the country, which still holds good. That report says:

Peru shares in the general paralysis of trade. This bears the more heavily since only a few years ago the output of the silver mines, notably Puno, Potosi, and the Cerro del Pasco, stimulated every branch of business and social life; and when the inflowing water rendered much of Cerro del Pasco inaccessible, there followed a larger source of revenue in the great guano deposits of the Chincha,

Lobos, and Guanojos islands. At the former a sea captain told us he had often seen 400 vessels at a time receiving cargo, and at the latter a naval officer said he had frequently found a fleet of from 100 to 300 vessels taking in the valuable freight. This bountiful accumulation of wealth has also been exhausted to a great degree, and not a vessel now visits those once busy spots for cargo. There is no accurate record of the amount Peru received from these guano deposits, but it was very large. In 1874 we find the estimated value of the guano of the country to be nearly £85,000,000, and in that year the export was valued at \$20,000,000. Following this item of income came the discovery of nitrate of soda in the desert region in southern Peru, and from this a large amount was derived until the Chilean invasion wrested it away. The country, too, in a general way, prospered under its sugar industries, producing in 1877 over 80,000 tons, while now it has fallen below 30,000, and is still decreasing. Peru also in times past exported large quantities of wool. Now, owing to causes hereafter mentioned, none goes out of the country.

The appalling decrease of exportable wealth is due not only to the universal blight upon commerce and manufactures everywhere, but also to several local causes, each of which was more disastrous than the one common to all the Pacific coast. The wealth coming from the immense sales of guano produced both an inflation of values in the Republic and a diminution of other industries. The revenue which flowed into the public coffers without toil or effort descended in its paralyzing influence to all the occupations and economies of the State. On its unceasing flow lavish expenditures were made, vast projects of internal improvements were based, and a great public debt created, the interest of which became an impossible burden as soon as the collapse of the guano and nitrate interests came, which were pledged to its payment. But while the inflow of revenue was so liberal, men thought it to be perennial, and so other and far less remunerative sources of revenue—those that depend upon hard work, patient cultivation, and careful hoarding—were neglected and fell into ruin. For a time the production of nitrate of soda would have compensated for the exhaustion of the guano deposits, but then came the war between Peru and Chile. The treaty of peace left Peru prostrate, bleeding and well-nigh destroyed.

The commerce of Peru with the United States was formerly very large, but it has now been reduced to a mere nominal account, including only those articles which can not be purchased elsewhere. Before the late war with Chile large imports of wheat, lumber, lard, kerosene, canned goods, trunks, clocks, sewing machines, railway and street car supplies, household utensils, perfumery, patent medicines, cordage, sail cloth, and other articles were made from the United States. In linen, cotton, and woollen goods the United States has no hold on

Peruvian commerce, nor can our merchants obtain one until the business system at home is modified to meet the requirements of this coast, the chief obstacle being found in the matter of credits. English and continental importers, through their agents and consignees in Peru, until the recent financial crisis, gave credit to the purchasers, sometimes extending to eight, ten, and twelve months, and naturally the purchaser prefers dealing with merchants granting such privileges. This refers particularly to linen, woollen, cotton, and other forms of wearing apparel with which the interior Peruvian markets are supplied by merchants on the coast, who are compelled to give credit to their customers and expect credit from those of whom they buy. Custom and habit also have a great influence in Peru as in other Spanish-American countries. The purchaser becomes accustomed to a certain class of goods with a peculiar trade-mark or some special token or medal attached to the bale or parcel of goods, and on no account will he invest in any other description of the material if the old one can be had. This conservatism of the Peruvians, which is especially marked in the interior, is at once apparent from the fact that they use the same implements of agriculture and husbandry that were employed at the time of the Spanish Conquest. American hardware and agricultural machinery might be pushed in the interior by means of active agents and by paying attention to the form of packing necessary for transportation on muleback.

From 1870 to 1880, before the war with Chile began, the exports from the United States to Peru averaged nearly \$2,000,000 annually; but they have now fallen off until the average is less than \$500,000. In 1875, for example, which was one of the average years, when Peru was at peace, she imported \$2,480,000 worth of merchandise from the United States, consisting as follows: Iron and steel, \$1,100,000; lumber and furniture, \$411,000; provisions, \$200,000; petroleum, \$105,000; breadstuffs, \$75,000; cotton manufactures, \$26,000; cordage, \$12,000; drugs, \$27,000; tobacco, \$15,000; and about a half million dollars' worth of other merchandise. This trade has so far fallen off that in 1883 we exported to Peru but \$75,000 worth of iron and steel, \$113,000 worth of lumber and furniture, \$83,000 worth of provisions, \$46,000 worth of oil, \$11,000 worth of drugs, \$600 worth of tobacco, \$60,000 worth of breadstuffs, \$7,000 worth of cordage, and \$42,000 worth of cotton goods.

The exports of Peru formerly were very large, amounting oftentimes to treble her imports. Of the exports, the United States has had only a small proportion, consisting of guano, nitrate of soda, hides, and sugar. From 1870 to 1880 the exports of the United States averaged about a million and a half of dollars, of which the greater part was nitrate of soda. The last official statistics obtainable (for 1877) show that the exports of that year to England amounted to

20,189,054 sols; to France, 3,249,000 sols; to Germany, 1,477,000 sols; to the United States, 484,178 sols. (Guano and nitrate of soda not included.) The principal articles exported, outside of guano and nitrate, have been silver, copper, and sugar, which have gone to England, France, and Germany. A little cotton has been sent to France, England, and Chile; rice, to Chile and Panama; cocoa, to France, Germany, and England; sarsaparilla, to England, France, and Germany; chocolate, to England, France, and Germany; wool, to England and France; tobacco, to Chile and Ecuador; drugs and dyestuffs, to Germany, England, and France; while the United States has taken a greater part of the hides and goatskins. During the year 1884 the exports to the United States amounted, outside of nitrate and guano, to but \$16,000, of which \$9,000 was in silver coin, \$2,800 in old iron, \$2,100 in goatskins, \$1,500 in cocoa leaves, and \$610 in antiquities.

But of late the commerce of Peru shows signs of revival, and it only requires the introduction of new capital and the application of labor to restore to the country its former prosperity. The natural riches still exist to a degree almost unequaled in any other land, and they are both agricultural and mineral; but they can not be developed without industry, patience and prudent business management. The people of Peru hereafter must suffer the curse imposed upon the parents of all mankind, like those of other nations, and earn their bread by the sweat of their brow.

The returns of the commerce of Peru are meager and inaccurate, and reliable recent statistics can only be obtained from the reports of the countries with which her trade is carried on. The principal exports are nitrate of soda, sugar, raw cotton, the wool of the sheep and alpaca goat, silver ore, hides and skins, cinchona bark and coca. The shipments of copper and tin have increased rapidly of late years, and petroleum is becoming a very important article of export.

Great Britain has the largest share of the Peruvian trade; but France receives a considerable amount of the exports, and the shipments of coca and cinchona to Belgium are frequently very large. The following table gives a comparison by articles of their imports into Great Britain, France, and the United States, com-

piled from the official statistics of the countries named, for the last five years:

Imports from Peru, by principal articles.

	1887.	1888.	1889.	1890.	1891.
Into the United States:	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>
Nitrate of soda.....	224, 751	58, 373	(*)	(*)	16, 722
Chemicals, drugs, etc. (all other).....	41, 872	28, 256	87, 918	43, 371	62, 137
Hides and skins, other than fur.....	177, 116	169, 641	187, 262	238, 519	233, 635
Cotton, raw.....	4, 044	3, 088	310	50, 390	54, 754
Other merchandise	13, 943	49, 682	38, 542	19, 415	19, 270
Total.....	461, 726	309, 040	314, 032	351, 695	381, 518
Into the United Kingdom:					
Nitrate of soda.....	3, 125, 987	4, 127, 668	175, 914	.....	142, 029
Sugar	1, 358, 182	1, 797, 534	2, 728, 155	2, 006, 195	1, 451, 852
Raw cotton.....	639, 190	996, 085	936, 981	1, 138, 265	768, 488
Alpaca (wool).....	946, 928	811, 771	1, 152, 056	928, 056	943, 439
Guano	241, 612	595, 290	166, 960	.....	78, 837
Sheep and lambs' wool ..	399, 209	269, 478	430, 554	396, 766	431, 790
Silver ore.....	399, 637	220, 107	242, 449	139, 561	405, 165
Tin ore.....	168, 464	175, 759	61, 060	31, 004	39, 312
All other articles.....	702, 707	547, 388	403, 010	487, 517	458, 738
Total.....	7, 981, 916	9, 541, 080	6, 297, 139	5, 127, 364	4, 719, 600
Into France:					
Nitrate of soda.....	3, 890, 205	6, 534, 906	7, 160, 091	7, 409, 250	.....
Hides and skins.....	347, 807	280, 284	200, 211	209, 909	.....
Copper.....	111, 383	573, 883	264, 783	474, 775	.....
Tin	85, 033	34, 921	39, 482	81, 832	.....
Cotton, unmanufactured ..	70, 136	90, 639	95, 263	112, 121	.....
Guano	61, 881	(*)	264, 529	125, 209	.....
Wool, unmanufactured ..	23, 155	49, 984	165, 682	48, 027	.....
All other articles.	204, 507	465, 632	480, 790	413, 672	.....
Total.....	4, 794, 107	8, 030, 249	8, 670, 831	8, 874, 795	.....

* Not stated.

The imports from Peru into the United States for the fiscal year ended June 30, 1892, were as follows:

FREE OF DUTY.

	Dollars.
Articles the growth, produce, and manufacture of the United States, returned..	1, 557
Chemicals, drugs, and dyes.....	21, 669
Cocoa, or cacao, crude, and leaves and shells of.....	7, 208
Coffee	1, 838

	Dollars.
Cotton, unmanufactured	267, 518
Guano.....	21, 552
Furs and fur skins, undressed	18
Hides and skins, other than fur skins:	
Goatskins	211, 595
All other.....	20, 128
Articles belonging to persons arriving from foreign countries and of citizens of the United States dying abroad.....	774
India rubber and gutta-percha, crude.....	1, 383
Ores, silver-bearing.....	217
Paper stock, crude	30
All other free articles.....	472

DUTIABLE.

Paintings in oil or water colors, and statuary.....	59
Chemicals, dyes, drugs, and medicines.....	34, 508
China, porcelain, parian, and bisque; earthen, stone, and crockery ware:	
Not decorated or ornamented.....	10
Decorated or ornamented	71
Furs, and manufactures of.....	591
Oils, mineral.....	4
Provisions, meat products.....	7
Tobacco, leaf, suitable for cigar wrappers.....	58
Wools, unmanufactured	33
Total	591, 300

THE IMPORTS OF PERU.

The imports of Peru are regulated by the purchasing power of the people, which for the last twelve years, since the war with Chile began, has been very limited. There is very little manufacturing in the country, as has been stated, and the imports consist exclusively of manufactured goods, cotton fabrics and other forms of wearing apparel constituting nearly one-third of the whole. Great Britain almost monopolizes the trade, and furnishes annually from 60 to 70 per cent of the merchandise brought into the country.

The following statement, compiled from the official statistics of the countries named, shows the exports by principal articles from

Great Britain France, and the United States, in United States gold:

Domestic exports to Peru, by principal articles.

	1887.	1888.	1889.	1890.	1891.
From the United States :					
Iron and steel, and manufactures of	<i>Dollars.</i> 109, 438	<i>Dollars.</i> 120, 849	<i>Dollars.</i> 140, 497	<i>Dollars.</i> 408, 215	<i>Dollars.</i> 376, 539
Wood, and manufactures of	94, 730	108, 560	114, 728	204, 711	225, 659
Cottons	90, 062	174, 811	107, 103	65, 716	111, 126
Flax, hemp, etc., manufactures of	14, 011	20, 597	26, 610	46, 944	42, 430
Provisions, meat, and dairy products	56, 044	114, 873	101, 553	293, 660	130, 211
Mineral oils, refined	21, 522	47, 761	57, 172	38, 489	52, 963
Breadstuffs	110, 499	46, 284	1, 788	78, 726	70, 106
Chemicals, drugs, dyes, etc	32, 887	30, 370	31, 188	37, 982	52, 598
All other articles	182, 775	201, 055	192, 605	244, 118	334, 575
Total	717, 968	865, 160	773, 244	1, 418, 561	1, 396, 207
From the United Kingdom :					
Cottons	1, 417, 217	2, 383, 007	1, 821, 741	2, 085, 164	2, 019, 471
Woolens	550, 562	743, 659	604, 395	629, 594	646, 334
Iron, wrought and unwrought	358, 354	568, 646	504, 559	485, 263	802, 695
Coal, cinders, and fuel	167, 252	379, 937	169, 062	224, 827	151, 737
Machinery and millwork	140, 306	214, 107	370, 905	254, 693	397, 452
Bags and sacks, empty	90, 960	181, 633	64, 802	30, 270	30, 430
Carriages, railway, and parts thereof	77, 450	90, 220	70, 107	12, 765	33, 671
Hardware and cutlery	56, 758	70, 749	97, 836	66, 812	74, 715
All other articles	631, 010	947, 757	950, 155	1, 677, 614	859, 640
Total	3, 489, 869	5, 589, 715	4, 663, 562	5, 467, 002	5, 016, 145
From France :					
Manufactures of leather and hides	315, 300	164, 647	165, 996	154, 583	.....
Manufactures of wool	174, 559	170, 832	256, 166	196, 350	.....
Ready-made clothing	120, 978	161, 540	212, 917	142, 653	.....
Felt hats	77, 124	63, 224	36, 225	34, 894	.....
Wine	47, 697	60, 114	105, 827	130, 842	.....
Manufactures of cotton	46, 044	51, 165	23, 715	46, 129	.....
Manufactures of iron and steel	28, 189	34, 263	31, 507	55, 930	.....
All other articles	245, 734	366, 164	499, 737	723, 725	.....
Total	1, 055, 625	1, 071, 949	1, 332, 090	1, 485, 106	.....

The following table gives a more detailed statement of the imports of Peru, but the figures could not be obtained for the same years from all the countries:

Exports to Peru, by principal articles.

Articles.	Domestic exports from—					
	The United States, 1889-90.	The United Kingdom, 1890.	France, 1889.	Germany, 1888-89.	Italy, 1889.	Belgium, 1888.
	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.
Breadstuffs.....	78, 726	.....	.....	.....	4, 053	.....
Carriages, carts, and cars.....	18, 082	70, 107	.....	.....	.....	.....
Candles.....	.....	.....	.....	.....	.....	112, 133
Chemicals, drugs, dyes, etc.....	37, 982	29, 486	33, 058	115, 906	52, 303	2, 509
Coal.....	1, 429	169, 062	.....	.....	.....	.....
Copper, and manufactures of.....	9, 760	18, 663	.....	72, 590	.....	.....
Cotton, manufactures of.....	65, 716	1, 835, 887	23, 715	457, 198	9, 650	25, 283
Earthen, china, and glass ware.....	14, 383	60, 997	.....	36, 414	.....	14, 861
Fancy articles.....	23, 892	.....	90, 207	54, 026	.....	10, 229
Fish.....	7, 523	.....	30, 816	.....	.....	.....
Flax, hemp, and jute goods.....	46, 944	188, 236	.....	24, 514	.....	2, 123
Gunpowder and other explosives.....	3, 941	21, 388	.....	48, 076	.....	.....
India rubber and gutta-percha.....	5, 383	25, 569	.....	6, 188	.....	.....
Iron and steel, and manufactures of....	408, 215	1, 043, 242	57, 786	77, 112	579	3, 281
Jewelry, gold and silver.....	4, 794	.....	14, 695	34, 748	.....	.....
Leather, and manufactures of.....	6, 702	.....	165, 996	60, 214	.....	.....
Malt liquors.....	2, 116	.....	.....	32, 844	.....	.....
Oils (vegetable).....	524	.....	.....	16, 898	54, 812	193
Paints and painters' colors.....	3, 397	44, 451	.....	.....	.....	6, 948
Paper and stationery..	11, 068	14, 522	50, 349	51, 884	*40, 337	.....
Provisions.....	293, 660	31, 087	.....	.....	2, 316	.....
Silk, manufactures of.....	.....	.....	.....	61, 404	.....	.....
Vegetables.....	142	.....	.....	.....	.....	.....
Wearing apparel.....	(†)	44, 143	212, 947	82, 110	.....	193
Wine.....	.....	.....	105, 827	.....	39, 372	.....
Wood, and manufactures of.....	244, 118	.....	.....	25, 704	18, 528	2, 316
Wool, manufactures of.	1, 533	604, 395	292, 390	288, 932	2, 509	13, 317
All other articles.....	128, 801	462, 327	254, 334	84, 252	36, 670	12, 931
Total.....	1, 418, 561	4, 663, 562	1, 332, 090	1, 631, 014	261, 129	206, 317

* Including books.

† Not specified.

COMMERCE WITH THE UNITED STATES.

From 1870 to 1880, before the war with Chile began, the exports from the United States to Peru averaged nearly \$2,000,000 annually; but they have now fallen off until the average is less than \$1,000,000. In 1875, for example, which was one of the average years, when Peru was at peace, she imported \$2,480,000 worth of merchandise from the United States, consisting of iron and steel, \$1,100,000; lumber and furniture, \$411,000; provisions, \$200,000; petroleum, \$105,000; breadstuffs, \$75,000; cotton manufactures, \$26,000; cordage, \$12,000; drugs, \$27,000; tobacco, \$15,000, and about half a million dollars' worth of other merchandise. This trade has so far fallen off that in 1891 we exported to Peru but \$376,539 worth of iron and steel, \$225,659 worth of lumber and furniture, \$130,211 worth of provisions, \$52,963 worth of oil, no drugs at all, no tobacco, \$70,106 worth of breadstuffs, no cordage, and \$111,126 worth of cotton goods.

The following table shows the fluctuation of trade between the United States and Peru from 1850 to 1890:

	Exports.	Imports.	Total imports and exports.
	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>
1850	275, 728	167, 503	443, 231
1860	987, 672	308, 452	1, 296, 124
1866	1, 215, 835	807, 238	2, 023, 073
1867	1, 730, 914	1, 701, 987	3, 432, 901
1868	1, 666, 355	1, 765, 397	3, 431, 752
1869	1, 673, 445	1, 386, 310	3, 059, 755
1870	1, 974, 167	2, 557, 833	4, 532, 000
1871	2, 381, 005	4, 731, 430	7, 112, 435
1872	4, 595, 403	1, 668, 983	6, 264, 386
1873	2, 864, 945	1, 186, 161	4, 051, 106
1874	1, 914, 871	1, 256, 286	3, 171, 157
1875	2, 480, 941	1, 291, 235	3, 772, 176
1876	1, 032, 808	1, 426, 043	2, 458, 941
1877	1, 300, 552	1, 479, 511	2, 780, 063
1878	1, 005, 638	1, 531, 591	2, 537, 229
1879	1, 305, 362	1, 857, 859	3, 163, 221
1880	918, 136	361, 308	1, 279, 444
1881	97, 530	760, 556	858, 086
1882	544, 819	3, 029, 676	3, 574, 495
1883	493, 894	2, 526, 918	3, 020, 812
1884	1, 070, 528	2, 077, 645	3, 148, 173

	Exports.	Imports.	Total imports and exports.
	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>
1885	742, 105	1, 764, 890	2, 506, 995
1886	813, 697	963, 480	1, 777, 177
1887	722, 829	461, 726	1, 184, 555
1888	870, 171	309, 040	1, 179, 211
1889	780, 835	314, 032	1, 094, 866
1890	1, 427, 301	351, 695	1, 778, 997

The exports to Peru in 1891 were \$1,399,991. In 1892 they were \$1,007,035. The imports from Peru in 1891 were \$386,518, and in 1892 they were \$591,300. The total commerce for the year 1891 was \$1,786,509. In 1892 the total commerce was \$1,598,335. It is gratifying to see that there has been a decided increase in the exports from the United States to Peru since the movement to extend the commercial arrangements between the American Republics began.

EXPORTS TO PERU.

The following statement shows the value of domestic merchandise exported from the United States to the Republic of Peru during the fiscal year ending June 30, 1885, compared with the exports of similar merchandise for the fiscal year ending June 30, 1891:

Articles.	Fiscal year ending June 30—		Increase (+) or decrease (—).
	1885.	1891.	
	<i>Dollars.</i>	<i>Dollars.</i>	<i>Dollars.</i>
Agricultural implements.....	8, 540	15, 965	+ 7, 425
Breadstuffs	1, 989	70, 106	+ 68, 117
Chemicals, drugs, dyes, and medicines	30, 899	52, 598	+ 21, 699
Cotton, manufactures of.....	114, 777	111, 126	— 3, 651
Flax, hemp, and jute, manufactures of.....	27, 548	42, 430	+ 14, 882
Iron and steel, and manufactures of.....	92, 604	376, 539	+283, 935
Oils (mineral).....	34, 453	52, 963	+ 18, 510
Provisions, comprising meat and dairy products.....	155, 379	130, 211	— 25, 168
Wood, and manufactures of.....	96, 994	225, 659	+128, 665
All other articles.....	172, 796	318, 610	+145, 814
Total	735, 979	1, 396, 207	+660, 228

The exports from the United States into Peru for the fiscal year ending June 30, 1892, were as follows:

	Dollars.
Agricultural implements:	
Mowers and reapers, and parts of	47
Plows and cultivators, and parts of	5,932
All other, and parts of	2,233
Art works, paintings, and statuary	362
Blacking	1,540
Books, maps, engravings, etchings, and other printed matter	19,208
Brass, and manufactures of	3,924
Breadstuffs:	
Bread and biscuit	1,223
Corn	16
Wheat flour	4,464
All other breadstuffs, and preparations of, used as food	467
Broom corn	47
Brooms and brushes	2,334
Candles	336
Carriages and horse cars, and parts of	9,955
Chemicals, drugs, dyes, and medicines:	
Dyes and dyestuffs	2,434
Medicines, patent or proprietary	20,530
All other	21,424
Clocks and watches:	
Clocks, and parts of	1,612
Watches, and parts of	12,521
Coal, anthracite	515
Copper, manufactures of	871
Cotton, manufactures of:	
Cloths, colored	23,883
Cloths, uncolored	85,794
Wearing apparel	1,999
All other manufactures of	2,356
Earthen and stone ware	172
Fish:	
Herring, dried, smoked, or cured	3
Mackerel, pickled	18
Other pickled fish	9
Salmon, canned	4,947
Canned fish, other than salmon	982
Shellfish:	
Oysters	522
Other	538
Flax, hemp, and jute, manufactures of:	
Cordage	32,189
Twine	331
All other	946

	Dollars.
Fruits, preserved.	
Canned.....	752
Other.....	157
All other green, ripe, or dried fruits	18
Glass and glass ware:	
Window glass.....	35
All other	11, 328
Glue	322
Grease, grease scraps, and all soap stock	2, 935
Gunpowder	504
All other explosives	22, 870
Hair, and manufactures of.....	160
India rubber and gutta-percha, manufactures of:	
Boots and shoes.....	160
All other.....	6, 653
Ink, printers' and other.....	755
Instruments and apparatus for scientific purposes, including telegraph, telephone, and other electric.....	11, 659
Iron and steel, and manufactures of:	
Car wheels.....	3, 505
Castings	451
Cutlery	1, 710
Firearms.....	9, 693
Locks, hinges, and other builders' hardware.....	16, 752
Machinery	54, 887
Nails and spikes:	
Cut	436
Wire, wrought, horseshoe, and all other, including tacks.....	1, 674
Printing presses, and parts of	4, 689
Saws and tools	28, 840
Scales and balances.....	4, 629
Sewing machines, and parts of	31, 763
Steam engines, and parts of:	
Stationary engines	5, 062
Boilers and parts of engines.....	2, 393
Stoves and ranges, and parts of.....	1, 441
Wire	2, 910
All other manufactures of iron and steel	27, 320
Jewelry and manufactures of gold and silver	2, 566
Lamps, chandeliers, and all devices and appliances for illuminating purposes.....	7, 650
Lead, and manufactures of.....	6, 987
Leather, manufactures of:	
Harness and saddles.....	2, 215
All other	2, 396
Lime and cement.....	30

	Dollars.
Malt liquors, in bottles	383
Marble and stone :	
Unmanufactured	15
Manufactures of.....	714
Matches	274
Musical instruments :	
Organs	458
Pianofortes	510
All other, and parts of	403
Naval stores :	
Rosin	11, 378
Tar.....	274
Turpentine and pitch	153
Turpentine, spirits of	9, 450
Oils (animal) :	
Lard	5, 419
Whale and fish	641
Other.....	172
Oils (mineral), refined or manufactured :	
Naphthas, including all lighter products of distillation.....	146
Illuminating	26, 685
Lubricating and heavy paraffin oil	12, 160
Residuum, including tar and all other, from which the light bodies have been distilled.....	49
Oils (vegetable) :	
Linseed.....	381
All other.	2, 153
Paints and painters' colors	3, 327
Paper, and manufactures of :	
Paper hangings.....	1, 211
Writing paper and envelopes	2, 449
All other.....	4, 921
Perfumery and cosmetics	22, 192
Plated ware.....	6, 936
Provisions, comprising meat and dairy products :	
Beef, canned	194
Beef, salted or pickled.....	1, 591
Tallow	9, 954
Bacon	522
Hams	4, 378
Pork, pickled	998
Lard	84, 357
All other meat products.....	1, 076
Butter	3, 373
Cheese	188
Milk	879

	Dollars.
Seeds.....	55
Silk, manufactures of.....	50
Soap:	
Toilet or fancy.....	1,809
Other.....	3,269
Spirits, distilled:	
Alcohol, including pure, neutral, or cologne spirits.....	132
Bourbon.....	146
Rye.....	386
Starch.....	24
Stationery, except of paper.....	5,727
Straw and palm leaf, manufactures of.....	7
Molasses and sirup.....	144
Candy and confectionery.....	1,570
Tin, manufactures of.....	2,093
Tobacco, and manufactures of:	
Cigarettes.....	174
All other.....	635
Toys.....	155
Trunks, valises, and traveling bags.....	2,638
Varnish.....	1,361
Vegetables:	
Beans and pease.....	8
Vegetables, canned.....	438
All other, including pickles.....	380
Vinegar.....	22
Wood, manufactures of:	
Boards, deals, and planks.....	127,403
Hoops and hoop poles.....	80
Palings, pickets, and bed slats.....	104
Shooks:	
Box.....	4,666
Other.....	500
Staves and headings.....	8,605
All other lumber.....	30,475
Moldings, trimmings, and other house finishings.....	3,332
Household furniture.....	23,023
Woodenware.....	2,412
All other manufactures of wood.....	10,868
Wool, manufactures of.....	317
Zinc, manufactures of.....	148
Manufactured articles not elsewhere specified.....	4,466
Total.....	1,003,277

The actual imports into the United States from Peru during the years 1890, 1891, and 1892 were as follows:

Imports.	1890.	1891.	1892.
FREE OF DUTY.			
Articles the growth, produce, or manufacture of the United States, returned	<i>Dollars.</i> 1, 523	<i>Dollars.</i> 143	<i>Dollars.</i> 1, 557
Chemicals, drugs, and dyes	18, 393	61, 851	21, 669
Cocoa, or cacao, crude, and leaves and shells of.	13, 026	1, 714	7, 208
Coffee .....	.....	3, 260	1, 838
Cotton, unmanufactured.....	50, 390	54, 754	267, 518
Fruits, all other.....	38	.....	.....
Hides and skins, other than fur skins:			
Goatskins.....	218, 397	224, 246	211, 595
All other	20, 122	9, 389	20, 128
Total.....	238, 519	233, 635	531, 513
India rubber and gutta-percha, crude ..	3, 734	13, 895	1, 383
All other free articles.....	230	153	23, 063
Total free of duty.....	325, 853	369, 405	555, 959
DUTIABLE.			
Chemicals, drugs, dyes, and medicines, all other ...	24, 978	17, 008	34, 508
Furs, dressed on the skin, and manufactures of fur.	40	87	591
Jewelry, and manufactures of gold and silver....	500	.....	.....
Wool, unmanufactured: Carpet and other similar			
wools.....	268	.....	33
All other dutiable articles.....	56	18	209
Total dutiable	25, 842	17, 113	35, 341
Total imports of merchandise.....	351, 695	386, 518	591, 300

The actual exports from the United States to Peru during the years 1890 and 1891 were as follows:

Domestic exports.	1890.	1891.
Agricultural implements.....	<i>Dollars.</i> 16, 150	<i>Dollars.</i> 15, 965
Breadstuffs:		
Wheat.....	77, 225	58, 801
All other	1, 501	11, 305
Total.....	78, 726	70, 106
Chemicals, drugs, dyes, and medicines.....	37, 982	52, 598

Domestic exports.	1890.	1891.
Cotton, manufactures of:	<i>Dollars.</i>	<i>Dollars.</i>
Cloths, colored.....	20, 596	28, 865
Cloths, uncolored.....	39, 929	78, 255
All other.....	5, 191	4, 006
Total.....	65, 716	111, 126
Flax, hemp, and jute, manufactures of.....	46, 944	42, 430
Iron and steel, and manufactures of:		
Castings, locks, hinges, and other builders' hardware.....	14, 054	17, 435
Cutlery, saws, and tools.....	28, 432	38, 587
Machinery:		
Steam engines, and parts of.....	25, 853	48, 196
Sewing machines, and parts of.....	33, 907	36, 105
All other.....	211, 562	143, 793
Wire.....	3, 966	3
All other.....	90, 441	92, 420
Total.....	408, 215	376, 539
Oils (mineral):		
Illuminating.....	24, 105	37, 713
Lubricating.....	14, 368	15, 250
Residuum.....	16	
Total.....	38, 489	52, 963
Provisions, comprising meat and dairy products:		
Lard.....	285, 190	117, 712
All other.....	8, 470	12, 499
Total.....	293, 660	130, 211
Wood, and manufactures of:		
Boards, deals, and planks.....	130, 903	129, 948
Other lumber and timber.....	40, 665	43, 325
Manufactures of.....	33, 143	52, 386
Total.....	204, 711	225, 659
All other articles.....	227, 968	318, 610
Total exports of domestic merchandise.....	1, 418, 561	1, 396, 207
Exports of foreign merchandise.....	8, 740	3, 784
Total exports of merchandise.....	1, 427, 301	1, 399, 991

The great obstacles which exist to the extension of trade between the United States and Peru are, first, the lack of transportation facilities and the difference in freight charges between Peru and the United States, and Peru and the countries of Europe. One can ship goods from Liverpool, Hamburg, or

Havre to Callao or other Peruvian ports for a little more than one-half the freight rates from New York to Peru by way of the Isthmus, and it is always cheaper in sending goods by steamer to Peru to ship them from New York via Hamburg, Liverpool, or Havre. This is due to the fact that the Pacific Steam Navigation Company has practically a monopoly of transportation facilities on the west coast of South America, and discriminates in favor of European merchants against those of the United States.

Another cause for the high charges is the cost of transshipment across the Isthmus of Panama. Most of the goods sent to Peru from the United States are shipped by sailing vessels around the Horn, and are often five or six months on the way. During all this time the buyer in Peru has to pay insurance on the value of the goods at a high marine rate; nor can he at any time promise the delivery of purchased goods on any given date. On the other hand, the British manufacturer can lay his goods down in the Peruvian market within a few days of any given date, and can usually promise their delivery within forty or fifty days after purchase.

Another obstacle to the trade is the failure of the manufacturers in the United States to understand the wants and tastes of the people of Peru. They have never studied the market, which has its peculiarities, governed by climatic and other conditions, which are essentially different from those that prevail in the domestic trade of the United States. Articles manufactured for the domestic trade are in many cases totally unsuitable for the Peruvian market, and the merchant in Peru could not dispose of them even if they were given to him.

A gentleman who has spent much of his life in Peru says:

It is remarkable that nearly one-half of the exports from England to Peru consists of cotton goods, while only a trifling portion of the American trade is in fabrics. The reason for this condition becomes evident on observation, and it is not confined to the trade in cottons, but is noted as well in other manufactures. The American has persistently refused to manufacture for the market,

insisting that the Peruvian shall wear the goods he chooses to make for him or buy elsewhere. The cottons sent to the coast country of Peru by the English are bogus goods, of which a large constituent is starch. They are thin, sleazy fabrics, sold for an exceedingly low figure; but as a covering for the nakedness of the body are all that is required; they answer the purpose and find a swift market. The American has sent his excellent goods to the northern markets and offered them at a fair price in that warm region, to see them sneered at because they were too dear and thicker than required. The English have also shrewdly studied the taste of the cholo population in designing prints. The Indian and mulatto of Peru, like these classes everywhere, are fond of gay colors and bright designs. The Englishman has given them what they demand, and thereby sold his goods.

The Americans have made similar mistakes in shoes. The Peruvian who wears a shoe never puts on a brogan. No matter if he buys the cheapest, he wants the pattern French. The heel must be high and in the middle of the foot, while the toe is long and finely pointed. An invoice of fancy American shoes sent to Piura a few years ago for children's wear lies in the show case where it was first deposited, because the American manufacturer believed he could force a people with an established taste to conform to the coarse utilitarian ideas of the Yankee, expressed in square toes and low, flat heels.

This difficulty can be overcome by the manufacturers of the United States if they will send to Peru and to other countries in South America intelligent agents for the purpose of studying the requirements of the people, the manner in which goods should be prepared for shipment, and the methods of doing business that prevail there. Through such an agent the manufacturer of the United States can establish agencies for the introduction and sale of his goods, arrange for terms of credit, inquire into the financial responsibilities of those with whom he desires to deal, make the personal acquaintance of the importers, and arrange for permanent agencies.

Appendix No. 1.

THE MINING LAWS OF PERU.

In Bulletin No. 40, published by the Bureau of the American Republics, under the title of "Mines and Mining Laws of Latin America," the following was said:

Nothing to be said about the mineral wealth of Peru will be equal to its immensity. It has been so well known and so well established for centuries that it has become proverbial in almost all modern languages. In Spanish, at least, the words "Peruvian" and "Peru" have become accepted synonyms of rich and richness; and the fact is not doubted, either in the United States or anywhere else, that, as stated by the South American Commission of 1884-85,¹ in their report of April 25, 1885, "upon the return of peace in that Republic and by permitting the ordinary forces of nature and commerce to do their work undisturbed * * * the mines of Peru would open up to a production not rivaled in its palmiest days."

Even at the time in which this report was made the production of silver was supplying annually to the mint for coinage about 1,200,000 sols, the chief source being the celebrated mines of Cerro de Pasco.

Peru abounds in all classes of minerals. Gold, silver, quicksilver, and other metals are plentifully found on its soil, and if recently the mining industry has not received there as much attention as in colonial times the reason is to be found in the facility of working the immense guano deposits which at one time were profitable enough to supersede all other industry in the country, and the not less valuable and abundant nitrate beds which are found in its territory.

How these two productions absorbed almost exclusively the attention of the country can be easily explained. The exportation of guano, which commenced in 1846, amounted, at the Chincha Island alone, in the nine years elapsed between 1851 and 1860 to 2,860,000 tons. In 1875 the guano exports

¹ House Ex. Doc. No. 50, Forty-ninth Congress, first session, p. 234.

amounted to 378,683 tons, valued at \$20,000,000. As to the nitrate beds, which have been worked in the Province of Tarapacá since 1830, the yield has been in no lesser proportion. In 1875 the exports through Tarapacá and Iquique amounted to 326,869 tons. In 1878 from Tarapacá alone 269,327 tons were exported. The Peruvian nitrate of soda imported into the United States from 1869 to 1881 amounted to 425,827,093 pounds.

In 1880 the nitrate exports to Europe, the United States, and the West Indies amounted to 481,200,600 pounds. In 1881 they were to the amount of 771,968,000 pounds, and in 1882 they reached the total of 1,070,302,600 pounds.

Gold is found in many places, and nearly all the mountain streams carry it with their sands. The mountains are interspersed with veins of gold and silver ores and with copper and lead. The silver ore is particularly rich, yielding from 5 to 50 per cent, and presents itself in all forms and combinations, from the pure metal to the lead ore mixed with silver. The value of the silver produced between 1630 and 1803 amounted to \$1,232,000,000. The mines of Hualgayoc, Huantajaya, and Cerro de Pasco yielded \$849,445,500.¹

Petroleum has been discovered in many places, but the richest springs are found principally in the Province of Paira, in the northern part of the Republic, and in localities near the coast and connected with it by railroad. An interesting book published in Lima in 1891 under the title of Petroleum in Peru from an Industrial Point of View, and written by Señor Don Frederico Moreno, lately the superior executive authority (*prefecto*) of the Province of Piura, shows that petroleum is destined to be in Peru as large a source of wealth as guano or the nitrates.

"Petroleum oil abounds through the entire coast length of the province," says Mr. W. Warren, a British mining engineer, in a report appended to the book above mentioned, "and is found in great abundance over large areas from the coast to 10 or 15 miles inland, from which there would appear to be ample reserves to last for generations. * * * Some wells drilled at different places yield 70 barrels per day. Other wells have given as much as 400 barrels. The operation of well drilling is very easy, one good, productive well, 210 feet deep, having been drilled in less than five days. Wells 345 feet deep can be drilled in ten days."

The petroleum deposits of Paita comprise, according to Señor Moreno, an area of 16,000 square miles. One of the districts of this province alone, named the Negritos district, in which the area of the petroleum fields is 2 square miles, will probably yield from 15,000,000 to 18,000,000 barrels, representing a value of \$15,000,000.

¹ See Appleton's American Cyclopaedia, in verbo Peru.

A very interesting paper, prepared by Mr. A. D. Hodges, jr., mining engineer, of Boston, Mass., under the title of "Notes on the topography and geology of the Cerro de Pasco, Peru," was published in 1888 in the transactions of the American Institute of Mining Engineers. All those desiring to have full knowledge of the wonderful wealth of that celebrated hill must study this exhaustive monograph.

MINING LAWS.

According to the excellent Dictionary of Peruvian Law (*Diccionario de Legislación peruana*), published by the learned jurist Don Francisco García Calderón, a law was passed on the 27th of March, 1857, providing for the appointment of a commission whose duty it should be to frame and report to Congress a mining code. But although the commission was appointed and the code was made and submitted for approval to the legislative body, it was never enacted as a law. Consequently, up to the date in which Señor García Calderón wrote (1879), the mining law in Peru consisted of the mining ordinances of Spain, promulgated on the 22d of May, 1783, and of several decrees of the Republic modifying or amending some of their provisions.

These royal ordinances are divided into 19 titles, and regulate the whole subject of mines and mining business in the following way :

Title I, consisting of 28 sections, provides for the establishment of a royal superior court of mines, and regulates in detail the duties and the powers of its respective officials.

This tribunal existed in Peru until the 19th of October, 1821, when it was abolished and superseded by what was called "Dirección General de Minería." But by law of the Peruvian Congress, approved on February 6, 1875, this *Dirección* was also abolished. Its executive authority was transferred to a bureau or division of the treasury department, and its judicial functions were devolved upon "territorial deputations," to be established in those localities where mines are in existence.

Title II, consisting of 16 sections, provides for the creation of local courts of mines, and also of diputaciones, or board of deputies, and the appointment of inspectors of mines.

The provisions of this title have been thoroughly modified in Peru. The mining courts, which retain the name of "Diputación de Minería," exercise judicial as well as executive authority on the subject of mines.

By law of January 24, 1871, a diputacion was ordered to be established in each province having more than fifteen miners.

In the department of Ancachs there are 4 diputaciones, 3 in Arequipa, 2 in Ayacucho, 1 in Cajamarca, 1 in Cuzco, 3 in Junin, 4 in Libertad, 2 in Moquegua, and 2 in Puno.

Title III, consisting of 37 sections, regulates the matter of jurisdiction in matters of mines and the course of proceedings to be pursued in mining cases, whether in the first, the second, or the third instance.

These provisions are all in force, except in such portions thereof as are affected by the suppression of the superior court of mines and the substitution therefor of *disputaciones de minería*.

Only in those cases in which the provisions of this title prove to be insufficient, either to decide some question in a mining cause or to properly conduct some proceedings in the same, is it permitted to resort to the code of civil proceedings, which then becomes the final law on the subject.

Title IV, containing only 4 sections, supplementary to a certain extent to the preceding title, establishes what has to be done in the absence of the local judge of mines or when a change of venue has been demanded.

Title V, "on the original ownership of the mines, the grants thereof in favor of private parties, and the dues and taxes to be paid on that account," contains only 3 sections, providing in substance, first, that the King (or his successor in Peru, the Republic) is the owner of all the mines, and, secondly, that mines, however, may be granted and allowed to become private property of an individual or corporation upon certain terms and conditions, two of which are the payment to the treasury of such a share of the yield as may be established by law, and the working of the mine in strict compliance with the provisions of these ordinances.

Title VI, which contains 32 sections, and Title VII, which contains only 6 sections, respectively, refer to the acquisition of the mines on the ground of discovery or by denouncement, and to the persons who are allowed or forbidden to make these discoveries or denouncements to own mining property or do mining work of any kind.

Many of these provisions are obsolete, while others have been expressly amended or modified by subsequent legislation in Peru. For this reason, the matter being of such a great importance, it has seemed proper to translate from the Dictionary of Señor García Calderón, *in verbo*, *Denuncia de minas*, the following paragraphs:

"Mines which have not been the property of any private party may be adjudicated to the discoverer. Those which have belonged to some private individual or corporation may be denounced or adjudicated to the denouncer.

"The discoverer of a new mining ground or region wherein no mine or shaft has ever been opened before shall be entitled to the concession of three mining properties, to be surveyed as will be seen hereafter, either close to each other or separate, as he may choose, on the principal vein or deposit discovered by him, and to the additional concession of one mining property on each further

vein or deposit he may have discovered in other places different from the main vein or deposit above named. The designation of these additional properties must be made within ten days. (Sec. 1, Title VI.)

"The discoverer of a new vein in grounds or regions already known as mineral and worked in some other parts shall be entitled only to two mining properties, either close to each other or separate, on condition, however, that they are designated within ten days. (Sec. 2, Title VI.)

"The privileges of a discoverer shall not be granted to any claimant of a new mine when said mine is found on a vein already known and worked at some place. (Sec. 3, Title VI.)

"Applicants on the ground of discovery must file their applications in writing before the *diputación de minería* of their respective districts, or of the nearest district if there is none in their own, setting forth their names and the names of their associates, if they have any, the place of birth and residence of each one, their respective occupations, and the full description of the hill, mountain, ground, or vein whose discovery is claimed. The whole of this information and the exact date, the day and the hour, of the filing of the application shall be entered on a register to be kept by the clerk of the *diputación*, and, this being done, the application, together with the decree of the court or *diputación* directing it to be published, shall be returned to the applicant, with the proper indorsement, for the security of his rights. The publication shall be made in the usual form for ninety days, during which the applicant shall be permitted to make a pit, $1\frac{1}{2}$ yards in diameter and 10 yards deep, for the purpose of enabling one of the members of the *diputación*, delegated to that effect, the clerk of the same *diputación*, and the mining inspector, or some other expert of the locality, all of whom must personally visit the place and inspect the work done, to ascertain the nature and the course or direction of the vein, its size, its inclination to the horizon, the degree of hardness of its material, and the greater or lesser firmness of its bed. A minute record must be made of everything noticed in this examination, and said record shall be transcribed in the register, in continuation of the entry already made on it in reference to the subject.

"When the examination is completed and proves to be satisfactory, possession of the mine shall be immediately given to the applicant, in the name of the nation. The mining properties shall be measured, and their limits shall be marked by *estacas* or poles.

"A further record shall be made and entered also on the register of the proceedings relative to this giving possession of the mine, and a full authenticated copy of the whole record and entries, which shall be given to the applicant, will constitute his title. (Sec. 4, Title VI.)

"If during the ninety days above referred to anyone appears and opposes the claim of discovery made by the applicant, or claiming a preferential right, a brief judicial hearing shall be given the opponent, and the proper decision shall be rendered upon the proper evidence in favor of the party who best proves his claim. But no opposition shall be listened to if made after the expiration of the ninety days above mentioned. (Sec. 5, Title VI.)

"Restorers of old mines abandoned or left to go to ruin shall be entitled to the same privileges as discoverers; and, under parity of circumstances, they, the same as the discoverers, shall on all occasions and for all purposes be preferred to all other persons. (Sec. 6, Title VI.)

"In case of doubt or dispute in determining who was the real original discoverer of the mine, preference shall be given to that claimant who proves to have been first in finding metal in the vein, even if the other contending parties had previously searched for it. If this can not be ascertained, the case shall be decided in favor of the claimant who first had his application registered. (Sec. 7, Title VI.)

"Whoever shall denounce, in the manner and form hereinafter described, any mine which is claimed to have been abandoned shall set forth in his application everything stated in section 4 of this title, and explain, furthermore, the position of the denounced mine, the name of its last possessor, if known, and the names of the owners or possessors of the neighboring mines, if there are such. A summons shall be served on all these people to appear before the *diputación* within ten days; and if they do not make their appearance, or oppose no objection, the application for the concession of the denounced mine shall be published for three consecutive Sundays. If this publication does not elicit any opposition or objection to the wishes of the applicant, notice shall be given the latter that he must within sixty days make some work at the abandoned mine, of sufficient depth, at least 10 yards vertically, and within the bed of the vein, in order to enable the inspector of mines, or some mining expert in his place, to ascertain the course and inclination of the said vein, and all the circumstances explained in section 4. The said official or expert shall personally inspect, if possible, the pits and other works of the mine, and see whether they are in a condition of ruin, or have been caved in or flooded, and whether they have any draft, pit, or adit, or admit of it. They must also see whether the said mine has any outer court or *galera*, or whim, or machines, or dwelling houses, or stables, and a record of all must be made and entered on the register. All of this being done, the mining properties shall be surveyed, the boundaries thereof being marked by poles, and possession of the mine shall be given the denouncer, all opposition to its being so done notwithstanding.

"No opposition shall be heard if not made within the sixty days above named. But if made in due time the question shall be settled after a brief hearing. (Sec. 8, Title VI.)

"Aliens not naturalized or domiciled in the country can not acquire the ownership of mines. (Sec. 1, Title VII.)

"Members of the religious orders are also disqualified to denounce or acquire or work mines. The same prohibition applies to all clergymen. (Sec. 2, Title VII.)

"The mining authorities are likewise forbidden to acquire or work mines in the districts in which they exercise jurisdiction." (Sec. 3, Title VII.)

Title VIII, which refers to "the mining properties, the spaces which are left between them, and the manner of surveying or measuring the said properties," contains 17 sections, which, translated in full into English, read as follows:

"SECTION 1. Experience having shown that the equality of the mine measures established on the surface can not be maintained underground, where in fact the mines are chiefly valuable, it being certain that the greater or less inclination of the vein upon the plane of the horizon must render the respective properties in the mines greater or smaller, so that the true and effective impartiality which it has been desired to show toward all subjects of equal merit has not been preserved; but, on the contrary, it has often happened that when a miner, after much expense and labor, begins at last to reach an abundant and rich ore he is obliged to turn back, as having entered on the property of another, which latter may have denounced the neighboring mine and thus stationed himself with more art than industry. This being one of the greatest and most frequent causes of litigation and dissension among the miners, and considering that the limits established in the mines of these Kingdoms, and by which those of New Spain have been hitherto regulated, are very confined in proportion to the abundance, multitude, and richness of the metallic veins which it has pleased the Creator, of his great bounty, to bestow on those regions, I order and command that in the mines where new veins or veins unconnected with each other shall be discovered the following measures shall in future be observed:

"SEC. 2. On the course and direction of the vein, whether of gold, silver, or other metal, I grant to every miner, without any distinction in favor of the discoverer, whose reward has been already specified, 200 yards (varas), called measuring yards (varas de medir) taken on a level, as hitherto understood.

"SEC. 3. To make it what they call a square—that is, making a right angle with the preceding measure, supposing the descent or inclination of the vein to be sufficiently shown by the opening or shaft of 10 yards—the portion shall be measured by the following rule:

"SEC. 4. Where the vein is perpendicular to the horizon (a case which seldom occurs) 100 level yards shall be measured on either side of the vein or divided on both sides, as the miner may prefer.

"SEC. 5. But where the vein is in an inclined direction, which is the most usual case, its greater or less degree of inclination shall be attended to in the following manner:

"SEC. 6. If to 1 yard perpendicular the inclination be from 3 fingers (*dedos*) to 2 palms (*palmos*), the same hundred yards shall be allowed for the square (as in the case of the vein being perpendicular).

"SEC. 7. If to the said perpendicular yard there be an inclination of 2 palms and 3 fingers, the square shall be of $112\frac{1}{2}$ yards; 2 palms and 6 fingers, 125 yards; 2 palms and 9 fingers, $137\frac{1}{2}$ yards; 3 palms, 150 yards; 3 palms and 3 fingers, $162\frac{1}{2}$ yards; 3 palms and 6 fingers, 175 yards; 3 palms and 9 fingers, $187\frac{1}{2}$ yards; 4 palms, 200 yards.

"So that if to 1 perpendicular yard there corresponds an inclination of 4 palms, which are equal to a yard, the miner shall be allowed 200 yards on the square on the declivity of the vein, and so on with the rest.

"SEC. 8. And supposing that in the prescribed manner any miner should reach the perpendicular depth of 200 yards without exceeding the limits of his portion, by which he may commonly have much exhausted the vein, and that those veins which have greater inclination than yard for yard—that is to say, of 45 degrees—are either barren or of little extent, it is my sovereign will that, although the declivity may be greater than the above-mentioned measures, no one shall exceed the square of 200 level yards; so that the same shall be always the breadth of the said veins extended over the length of the other two hundreds, as declared above.

"SEC. 9. However, if any mine owner, suspecting a vein to run in a contrary direction to his own (which rarely happens), should choose to have some part of his square in a direction opposite to that of his principal vein, it may be granted to him, provided there shall be no injury or prejudice to a third person thereby.

"SEC. 10. With regard to the banks (*placers*), beds (*rebosaderos*), or any other accidental depositories of silver or gold, I ordain that the portions and measures shall be regulated by the respective territorial deputations of miners, attention being paid to the extent and richness of the place and to the number of applicants for the same, with distinction and preference only to the discoverers; but the said deputations must render an exact account thereof to the royal tribunal general of Mexico, who will resolve on the measures which they, in their judgment, may consider the most efficacious, in order to avoid all unfair dealing in these matters.

"SEC. 11. The portions being regulated in the manner described above, the denouncer shall have his share measured at the time of taking possession of the mint, and he shall erect around his boundaries stakes or landmarks such as shall be secure and easy to be distinguished, and enter into an obligation to keep and observe them forever, without being able to change them, though he may allege that his vein varied in course or direction (which is an unlikely circumstance), but he must content himself with the lot which Providence has decreed him and enjoy it without disturbing his neighbors. If, however, he should have no neighbors, or if he can without injury to his neighbors make an improvement by altering the stakes and boundaries, it may be permitted him in such case, with the previous intervention, cognizance, and authority of the deputation of the district, who shall cite and hear the parties and determine whether the causes for such encroachment are legitimate.

"SEC. 12. In the mines already opened and worked the old measures of the portion shall be retained, but they may be extended to the limits prescribed in these ordinances, whenever such change can take place without prejudice to third persons.

"SEC. 13. The immutability of the stakes or boundaries already defined in section 11 of this chapter shall also be observed henceforward in those mines which are in course of working, or which shall be denounced as deserted or lost, the limits being ascertained in those cases where there are none at present, and each being attended to in its order, beginning with the oldest; and as to any intermediate spaces (*demasias*), they shall be regulated according to the provisions of section 13 of Chapter VI.

"SEC. 14. As it has been found that the license or permission of following a vein by working lower down and within the vein, and having enjoyment thereof, until the owner himself has bored it, has been, and is the most fruitful cause of bitter dissensions, litigations, and disturbances among the mine owners, and further considering that such intrusion is more generally the result of fraud or chance than of the merit and industry of the person so intruding, and that the consequences thereof occasion, for the most part, nothing but serious detriment to, or the total ruin of, the two mines and the two neighboring miners, to the great prejudice of the public and of my royal treasury, I order and command that no mine owner shall enter the property of another, even though merely by continuing his own vein at a greater depth, but that everyone shall keep and observe his own boundaries, unless he makes an agreement and stipulation with his neighbor to be permitted to work in his property.

"SEC. 15. But if a mine owner, pursuing his operations fairly, comes to the property of another while in pursuit of a vein which he is working, or discovers it at that time without the master of the property being aware of its existence,

he shall be obliged to give such proprietor immediate notice thereof, and the two neighbors shall thenceforward divide the cost and profits equally between them (one for the merit of the discovery, and the other as owner of the property), until there shall be a communication effected between the mines, either by the principal vein, or a cross lode or in any manner that may be most convenient; whereupon, after erecting a mutual boundary (*guardaraya*), each proprietor shall remain within his own boundaries. But if anyone so discovering and following a lode into the property of his neighbor fails to give immediate notice thereof to such neighbor he shall not only lose his right to the half of all the metal that may be extracted, but also shall pay double the value of what he has already extracted, it being understood that before exacting this penalty fraud and misconduct of persons so encroaching must be proved in the plainest and most satisfactory manner.

"SEC. 16. And in case a mine owner shall have advanced so much in his subterranean operations as to have passed beyond the limits of his own property, whether in length or square measure, I declare that he shall not on this account be obliged to turn back or suspend his work, provided the ground he has entered be unclaimed (*terreno virgen*) or within the limits of a deserted mine. He must, however, denounce this new property, which shall be granted him, observing always that such new portion must not exceed its former size, and that he must move his boundary marks to his new limits in order that they may be generally known.

"SEC. 17. The mine owner shall not only possess a portion of the principal vein which he denounced, but likewise of all those which in any form or manner whatever are to be found in his property; so that if a vein takes its rise in one property and, passing on, terminates in another, each proprietor shall enjoy that part of it which passes through his particular limits, and no one shall be entitled to claim entire possession of a vein from having its source in his portion, or on any other pretense whatever."

Title IX, consisting of 18 sections, provides for the preservation and safety of the mines and of the miners, and makes rules to determine when a mine has been really abandoned and becomes thereby again liable to denouncement.

Title X, containing 17 sections, provides for the proper drainage of the mines.

Title XI, containing 12 sections, refers to the organization of mining companies and all matters pertaining to them.

Title XII, on "the laborers, both in the mines and in the reducing establishments," regulates in detail, in 21 sections, everything relative to the protection of the rights of the laborers and their duties and privileges.

Title XIII, of 19 sections, refers to the necessity that mines should be properly supplied with water, as well as with provisions of all kinds for the laborers.

Title XIV, containing 13 sections regulates the subject of what the ordinances call *maquileros*, or persons engaged in the reduction of ores for other persons, and also of the purchasers of metals.

Titles XV and XVI, the former of 17 sections and the latter of 20, respectively refer to "the contractors for supplying the mines with money and other things necessary, and the dealers in gold and silver," and to the establishment of a "supply fund" and a "bank of supplies."

Title XVII, on "the surveyors in mining matters," and title XVIII, on "the mining education of young people," contain, respectively, 11 and 19 sections, which almost exhaust the matter.

Title XIX, which is the last, contains 13 sections and refers especially to the privileges granted to mines and miners intended to encourage and promote the mining industry.

Appendix No. 2.

FINANCES, TRADE, COMMERCE, ETC., OF PERU.

[From the South American Journal, published in London, of December 30, 1893.]

The report of Sir C. E. Mansfield, our minister at Lima, to our foreign office, on the finances, trade, commerce, etc., of Peru, has been published. This document, covering the year 1891-92, also furnishes some data of 1893, and from it we make the following extracts:

INTRODUCTION.

In the year 1890 Señor Delgado, then minister of finance, published in his annual report to Congress a great deal of interesting information concerning agriculture in Peru—products, industries, statistics, etc.—information which formed the base of a report from this legation upon labor and agriculture in the Republic. Since Señor Delgado's report no information has emanated from official sources upon agriculture, commerce, or industries. No general statistics are forthcoming, and it is therefore to be presumed that such subjects afford little or no interest to the public in Peru. Señor Delgado lamented the insufficiency and incompleteness of his information, the data by no means corresponding to the same years or periods. If, therefore, the minister of finance be unable to command statistical information of a symmetrical character, it becomes evident that nobody else is in a position to do so.

FINANCES.

The receipts for 1891 amounted to 8,608,042 sols 87 centavos, including a sum 342,540 sols 50 centavos derived from various sources not comprised in the estimates, namely, advances upon future customs receipts, arrears of debts, etc. The receipts from customs dues figure in the budget for 5,528,288 sols 66 centavos, exhibiting an increase of 531,791 sols 1 centavo upon the estimated amount of 4,996,600 sols. Tobacco tax and excise produced 288,556

sols 86 centavos, a diminution upon the estimate of 11,433 sols 14 centavos. Excise on spirit monopoly produced 251,041 sols 70 centavos, showing a diminution of 22,646 sols 7 centavos. The opium monopoly, estimated at 235,000 sols, yielded an excess of 16,041 sols 70 centavos. The expenditure is stated to have been 8,179,981 sols 13 centavos, leaving a surplus of 428,061 sols 74 centavos; but on examining the items it is found that various departments have been neglected altogether, others paid only in part, while others have received sums over and above the estimates. The surplus of the year 1891 exists, therefore, only upon paper.

The estimated revenue of the above year amounted to 7,104,423 sols 14 centavos; the actual receipts were 7,066,390 sols 38 centavos; the disbursements authorized by the budget amounted to 6,572,927 sols 37 centavos, leaving a balance not accounted for of 493,463 sols 1 centavo. In the above sum of 6,572,927 sols 37 centavos is included the sum of 531,595 sols 77 centavos, which has been diverted from the objects to which it was assigned and paid to other departments by Presidential decree.

If the financial condition of Peru was not very encouraging in 1891-92, what shall be said of that of the first six months of the present year, where there is a falling off of 40 per cent in the receipts of the custom-houses. The figures are as follows:

	1892.	1893.
	Sols.	Sols.
Custom revenues (first six months).....	2,975,993	2,075,315
Decrease in 1893.....		900,678
Total		2,975,993

The return for 1893 is inclusive of 50 per cent additional duty and 8 per cent on other imports.

Converting the receipts into their sterling equivalents at the average rate of exchange obtaining in the periods, viz, 32.84d. in the first six months of 1892 and 28.52d. in the corresponding months of 1893, the comparative result is as follows, viz: For 1892, £407,215, and for 1893, £246,616.

How much of the decline may be attributed to the receipts of the early months of 1893 having been anticipated through the desire of importers to avoid the higher rates of duty which came into operation in January, 1893, it is difficult to estimate. The law imposing the extra duties was passed in the last days of October, and there would not have been much time for the arrival of fresh consignments from abroad. On the other hand, the principal importers keep their

stocks in the warehouses at Callao, and clear the goods according to requirement, and it would seem that the warehouses were pretty well emptied by the end of December, 1892.

The decline in the customs receipts is mainly owing to the depreciation of silver, a matter which will be treated further on under a separate head. Under any circumstances it is to be apprehended that the gross deficiency of receipts in the year will be some 30 per cent. Increased excise and duties would only check an already failing consumption, and it is difficult to see how the Government of the Republic is to deal with a diminution of revenue, which is not a matter of opinion but a simple question of facts and figures.

EXPORTS AND IMPORTS.

To obtain information concerning exports and imports in Peru recourse must be had to the statistics of other countries. Even then no exact or complete information is attainable. Great Britain, France, and the United States give such returns in money value, and Germany in weight. In 1891 the exports from Peru to Chile amounted to the sum of 1,190,479 sols 12 centavos, while the imports from Chile were to the value of 1,103,274 sols 1 centavo, exclusive of wheat, which was roughly estimated at 2,000,000 sols. Excluding wheat, the balance was in favor of Peru. Since the recent legislation in India touching the rupee, Chinese rice is said to be supplanting Indian rice in Peruvian ports.

The value of imports and exports during the year 1891 were: Imports, 14,763,241 sols 18 centavos; exports, 11,616,716 sols 27 centavos; excess of imports over exports, 3,146,524 sols 91 centavos.

The articles of export mentioned below were in 1891 valued as follows:

	Sols.	Centavos.
Sugar.....	2, 953, 362	62
Cotton... ..	1, 214, 140	35
Silver in ore and bar.....	2, 201, 895	25
Silver specie.....	1, 479, 456	52

MINING.

The crisis in silver need not necessarily lead to any considerable closing of silver mines in Peru. The average of Peruvian silver mines are, as is well known, not of a high standard as compared with Bolivia. The rate of labor, however, is so low that even with prices ranging below the present, silver workings in Peru may still yield profit for some time to come.

SUGAR.

Sugar is without doubt the most paying business in Peru. Estates, whether owned by companies or individuals, when not weighted with excessive capital or incumbrances, do extremely well, and probably the day is not far distant when many sugar estates will pass into the hands of English companies, like the Cartavio estate in the Chicama Valley, formerly owned by the Messrs. Grace and now worked by an English limited liability company. In many cases the Peruvian sugar producer has not been able to reap the full benefit consequent upon the late high prices of sugar. Through deficiency of capital and other causes there had been a considerable cessation in cane planting during the last few years, while the long, chilly winter of 1892 prevented the cane from shooting up, and the crop was of an inferior quality, so that for many months during the present year grinding was carried on to but a limited extent.

COTTON.

In the report from this legation, transmitted in the year 1890, upon labor and agriculture in Peru, mention was made of plans for irrigating the great northern cotton field in the vicinity of Piura from the waters of the River Chira. The schemes are still in a state of gestation. Much is talked and written upon the subject, but it seems doubtful when any action will be initiated, unless, indeed, the circumstance of the Peruvian Corporation taking over the Payta-Piura Railway and introducing a better management of the line may give an additional stimulus to the district, while it is also possible that the corporation might materially give a helping hand to an undertaking which would assist in increasing the receipts of the line. Peruvian cotton does not compete with that of the United States, but a certain quantity finds its way to North America.

Peruvian cotton is almost exclusively used by manufacturers of woollen goods. The mixing of this cotton with wool should not be termed adulteration; in fact, in many cases the cotton is more valuable than the wool with which it is mixed. It improves the woollen goods, reduces the tendency to shrinkage, makes them more durable, adds often a better luster, and gives a superior finish. For dyed goods it is equally suitable, and makes fast colors. Peruvian cotton might well be designated as vegetable wool. When carded, the resemblance is so close and its characteristics so similar to wool that it could be readily sold as such. When woven with wool the cotton fibers can not be determined with certainty except by special test.

The quantity and value of cotton exported from Payta during the years 1888-1892 were as below :

	Quantity.	Value.
	<i>Bales.</i>	<i>Sols.</i>
1888	73, 500	1, 470, 000
1889	63, 306	1, 266, 120
1890	51, 508	1, 215, 160
1891	16, 953	339, 060
1892	1, 231, 582	463, 160

No returns seem to have been made public of the export of cotton from the ports of Pisco and Huacho, which is very considerable. Several cotton mills are in operation in Peru, and in a few years' time no foreign cottons, except prints and the very finest sorts of white calico, should be imported from abroad. The factory at Vitarte, near Lima, has been purchased and is being worked by an English company. Another factory has been recently established at Pisco, a center of cotton planting, and others will doubtless follow.

PETROLEUM.

The oil of the London and Pacific Petroleum Company is used by the major part of the locomotives of the Peruvian Corporation, but, notwithstanding the low price, has not succeeded in displacing the importation of kerosene from the United States. The company possesses one small tank steamer, and the project for such steamers to supply such markets as Japan and China, for the present at least, does not appear to be a contingency in the immediate future. The works at Zorritos, north of Talara, still furnish oil in the Lima market, oil which is more particularly adapted for lubricating machinery. Various sinkings have been effected in the petroleum district in the vicinity of Tumbes, but the result has not been sufficiently favorable to warrant the establishment of works.

SILVER QUESTION.

Peru, a silver-producing country with an inconvertible silver currency and no paper, is being materially affected by the silver question. The exchange of the sol exactly follows the current price of silver at the ratio of about 11½d. Thus if the ounce of silver stand at 34d., the rate in Peru of bills at three months' sight rules at about 25½d. to the silver sol. The depreciation of their currency has been much discussed in political and business circles in Lima, as well as by the press. A gold standard is advocated on all sides, but so agreeable

a solution is, however, distinctly impracticable in a country where the Government has neither internal or external credit, whose finances are in a chronic state of irregularity, with the revenue diminishing at an unprecedented ratio, and where from various causes an alleged gold standard, if, as would be necessary, accompanied by a corresponding moiety of paper, is recognized as likely in the end to lead to the evils of a forced paper currency.

The producers of articles for foreign consumption, such as sugar, cotton, and wool, are favored by the low price of silver. Ordinary wages in the interior have not yet risen in proportion. The producer carries on his undertaking in a depreciated currency, and is paid in gold. On the other hand, the community at large is much pinched by the depreciation of the sol. Steamer and railway charges have risen from 25 per cent to 30 per cent. Articles from abroad in some cases have risen higher, even to 50 per cent. Some importers are almost trading at a loss, as the community is unable to stand a rise upon high-priced articles of luxury, foreign wines, etc.

The whole scale of living is becoming dearer, private incomes and salaries remain stationary, and superfluities have to be suppressed—a state of things disagreeable to the individual and disastrous to the importer, who, it may be remarked, for the most part is a foreigner. Even articles of native production, market stuffs, etc., become gradually more expensive. The producer pays more for various matters and raises his prices. The consumer can not pay the higher prices and does without. Less, in consequence, is produced, and that less ranges again at higher prices from comparative scarcity and absence of competition.

RATES OF EXCHANGE.

The rate of exchange at the various dates mentioned in this report have varied to the extent of 9½d. to the sol. In 1891 the sol was as high as 36d., while the present quotation is 26½d. Three months since the sol was quoted as low as two shillings.

MOLLENDÓ.

Mr. Vice-Consul Robilliard reports as follows: This year has been uneventful. Business has not increased, as was hoped for, by the extension of the railway in the direction of Cuzco, and traffic with Bolivia has greatly fallen off since the opening of the Chilean Railway from Antofagasta to Oruro, referred to in my last report. The mines at Caylloma have also given less this year, owing, in a measure, to the difficulty to contend with in keeping the water from entering and thus preventing work from going on.

The total amount received for imports by the customs this year is 695,309 soles 63 centavos, which, at an average exchange of 2s. 8d. to the silver sole,

equals £92,707 18s. 2d., nearly £15,000 less than last year, owing principally to the fall of 3d. per sole in the average rate of exchange.

The approximate total value of the principal articles of export during the year 1892 amounted to \$4,928,586.76, equivalent in sterling at 32d. exchange to £657,144 18s., or about £20,000 under last year. The export of antimony has more than doubled. There is a mine being worked that yields 50 to 100 tons a month of ore that will give 70 per cent of pure antimony.

The prospects of trade with Bolivia are not very flattering. A steamer of 260 tons capacity, the *Coya*, has been taken up to Lake Titicaca, where it is at present being reconstructed, the keel being laid on July 15 last, and will be ready for traffic on the lake in March, 1893. Two dredgers are also being put together at the mouth of the Desaguadero River to be used in making this river navigable as far as Nusacara, a port distant about 5 leagues from Oruro, to bring down the products from that city and Corocoro. With these improvements something will have been done to counteract the competition via Antofagasta, Chile; but much valuable time has been lost, and the Chilean route has the start and will keep it for some time.

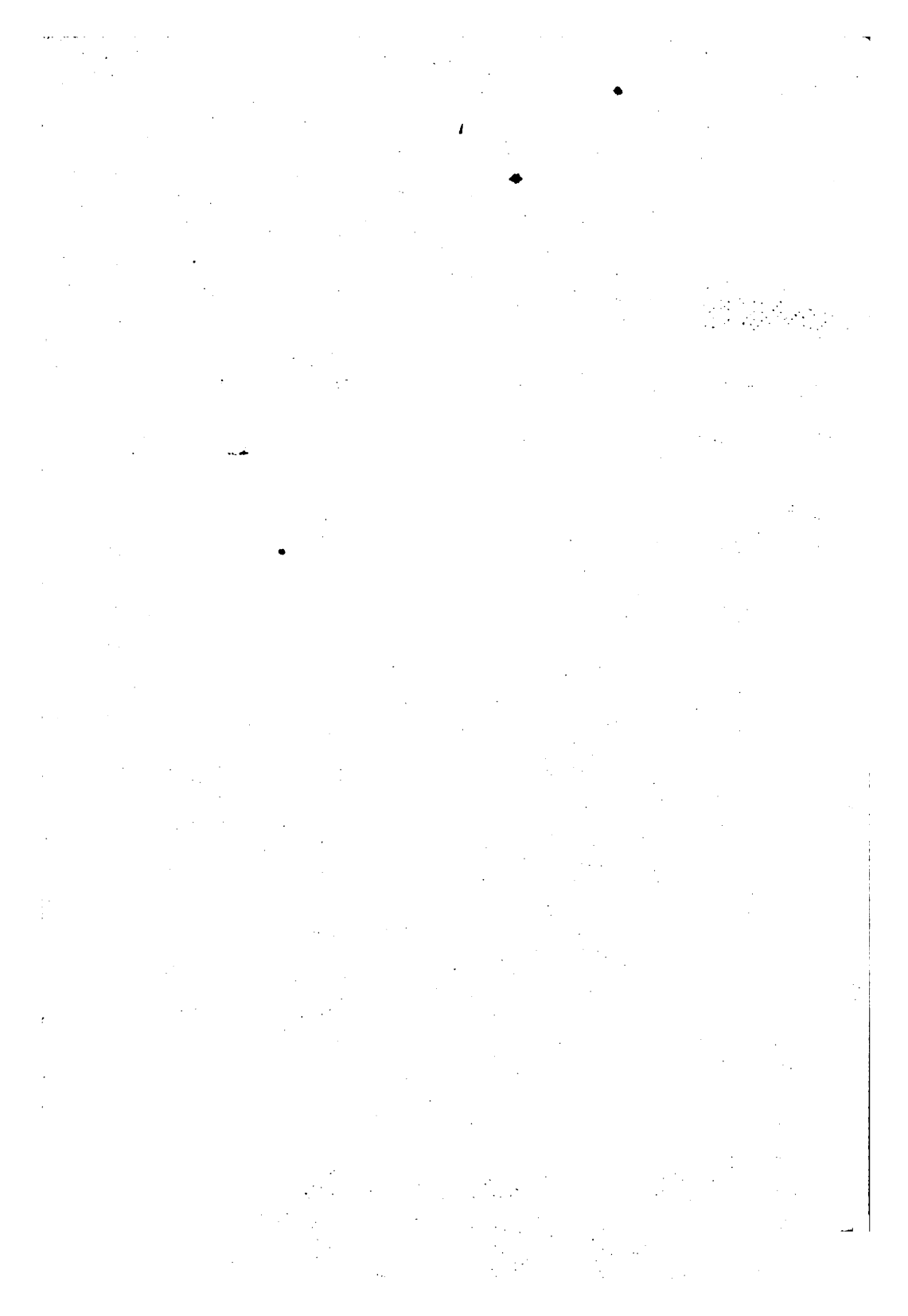
Owing to a falling exchange, and the not very peaceful political prospects, merchants have been very chary about importing more than was easily and promptly disposable. The result is that stocks in the custom-houses were never so low as at the end of the year. An extra 8 per cent on the duties to be levied from January 1, in order to help the Government to meet its obligation to pay the Peruvian Corporation Company £80,000 per annum, will also have a depressing effect on imports, and very little improvement in trade can be looked for in 1893.

There has been nothing done toward improving the port of Mollendo. Rather the contrary, as, owing to a proposal made to and accepted by Congress in August last, by two private individuals, to extend this railway to Islay, and no steps having been taken toward carrying this out, all the building and improvements that were being made here have been suspended until something definite can be arranged. The opinion of many is that the proposal to extend the line was only made as a speculation to try and induce the Peruvian Corporation Company to offer them some sum to desist from the undertaking; but if this was the object it has failed, and the only result has been to prejudice in a further degree this port. Something should be done, either by the Peruvian Corporation Company or others, to make the landing and embarking here less dangerous and to avoid so many days being lost in discharging vessels on account of the surf. That this is feasible, though rather costly has been admitted by every engineer who has surveyed the bay.

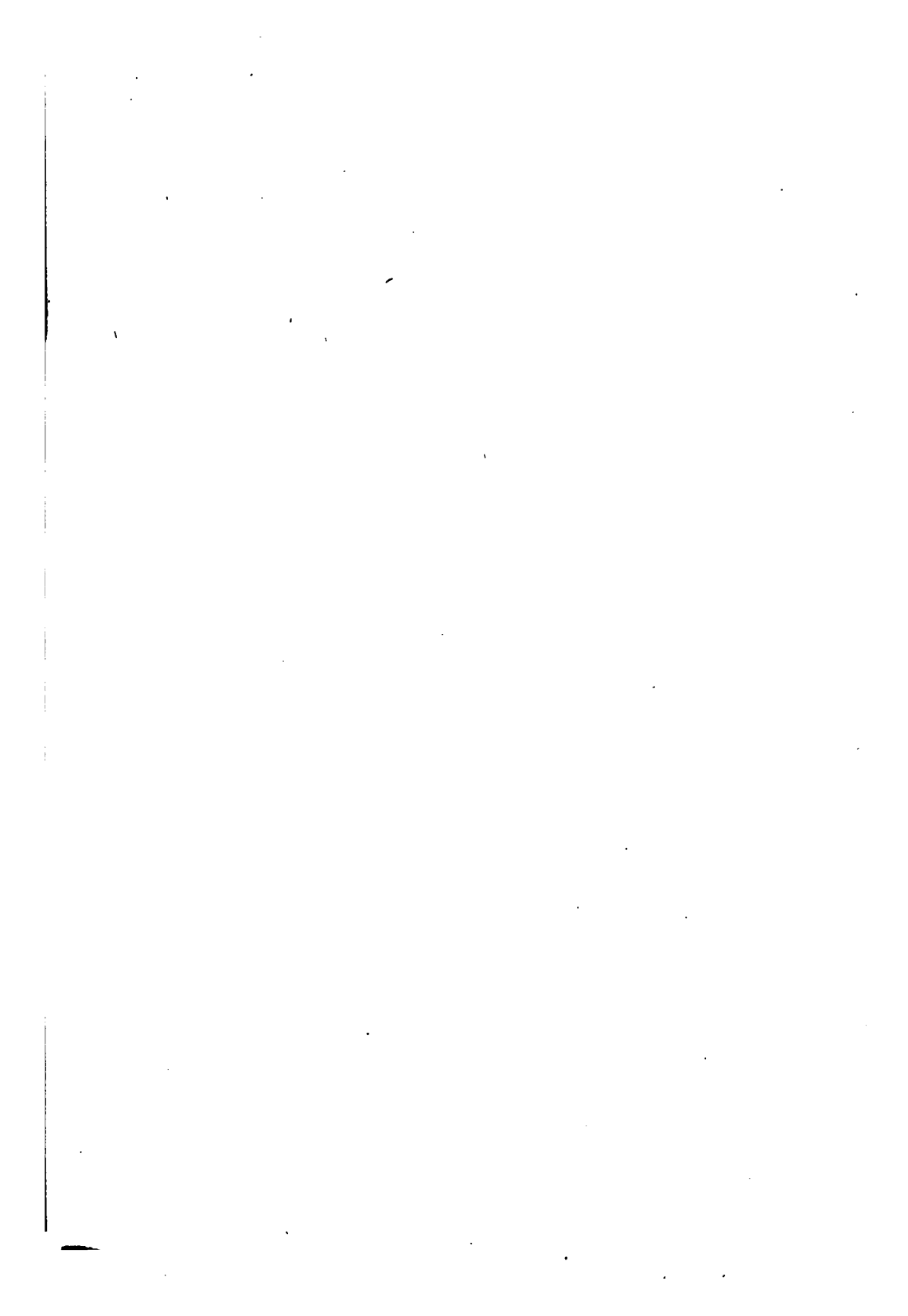
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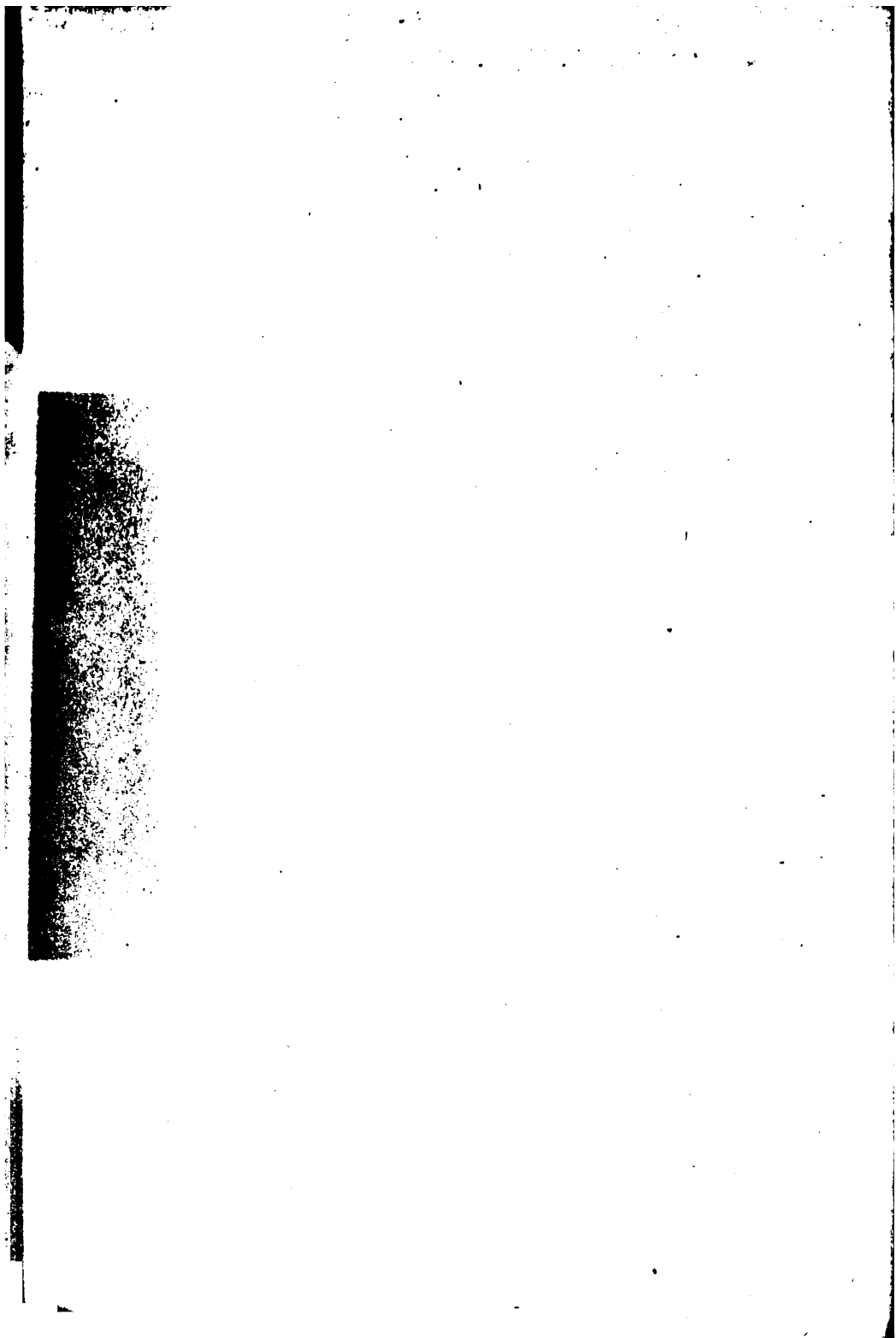
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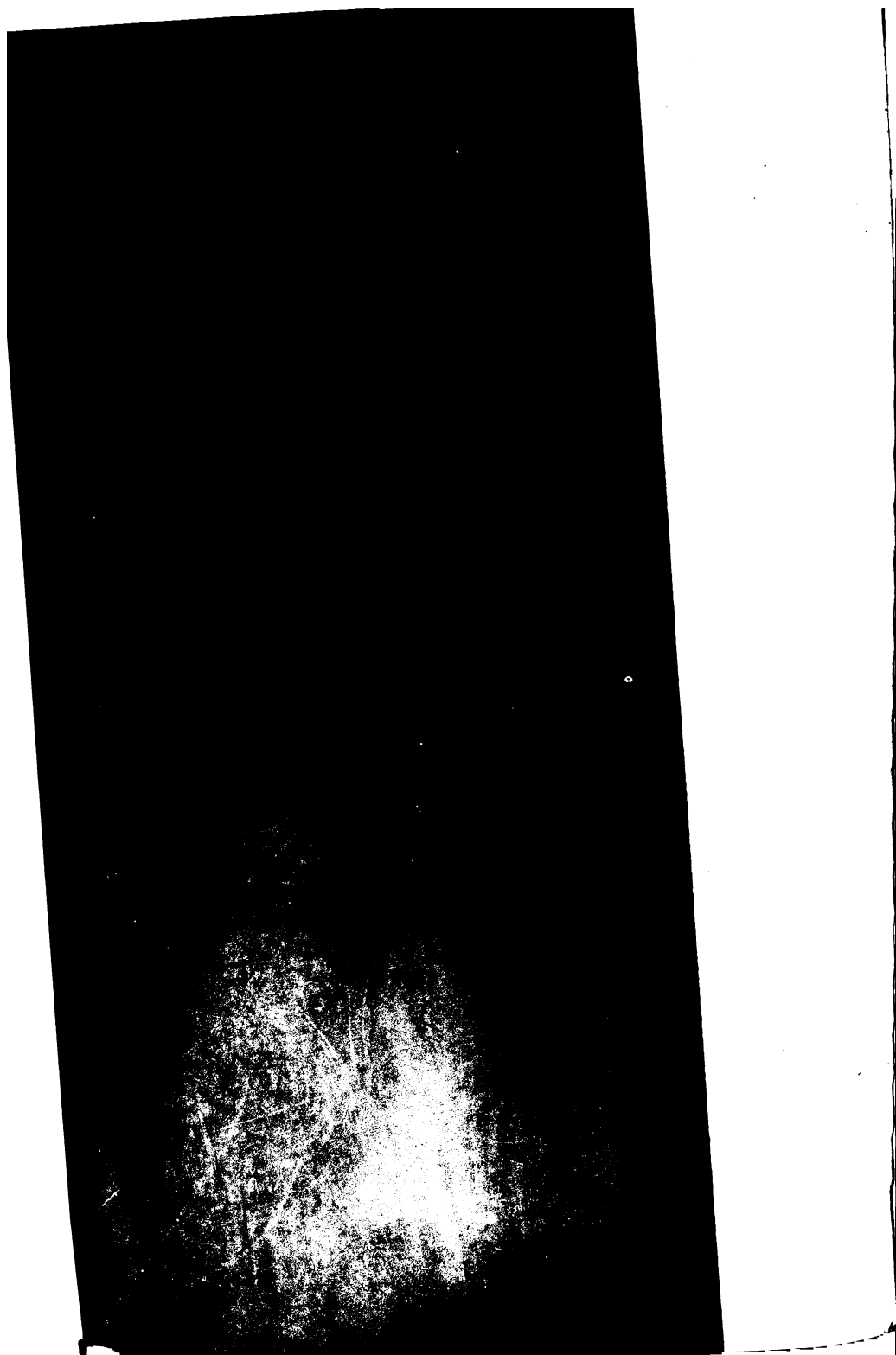


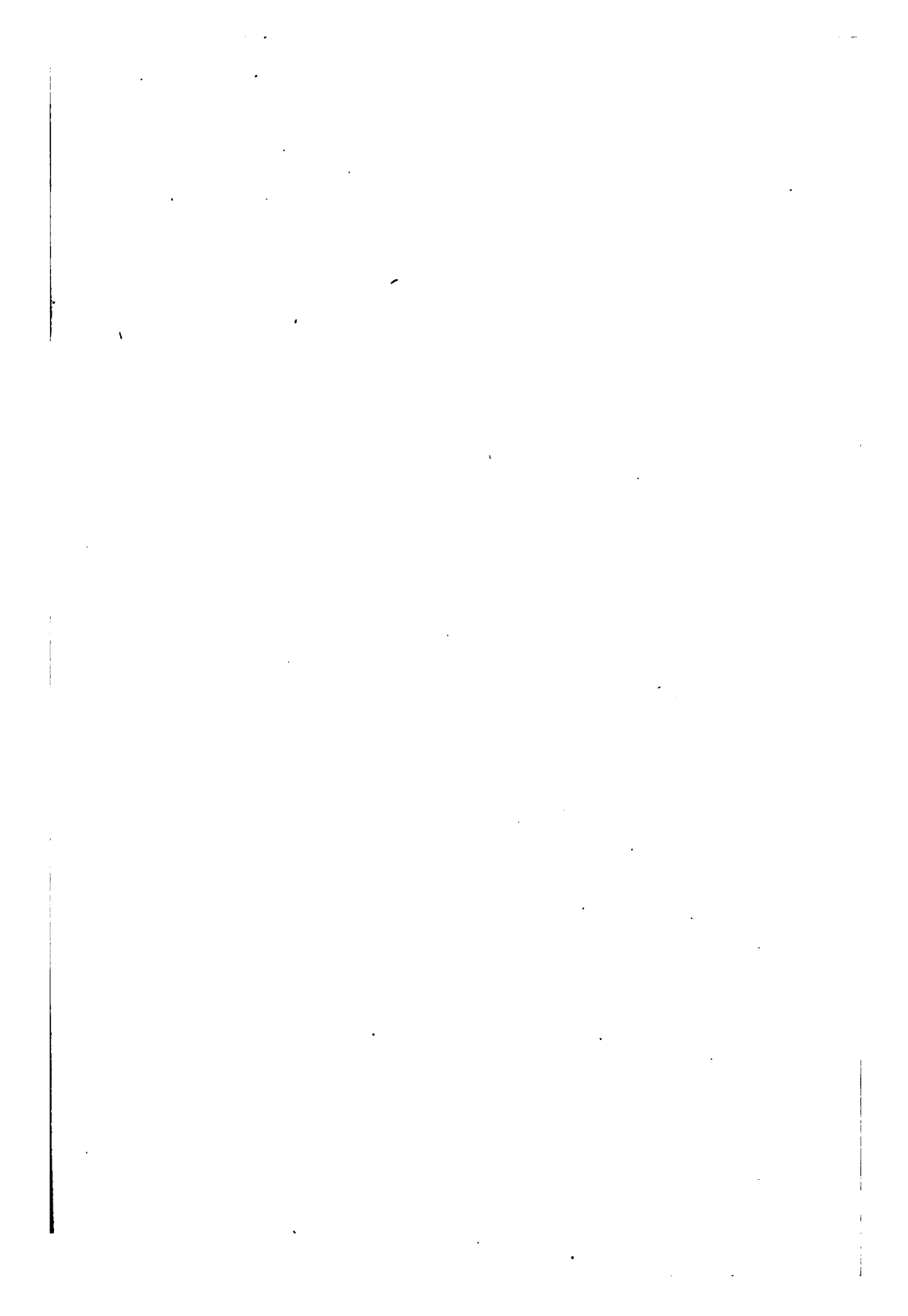


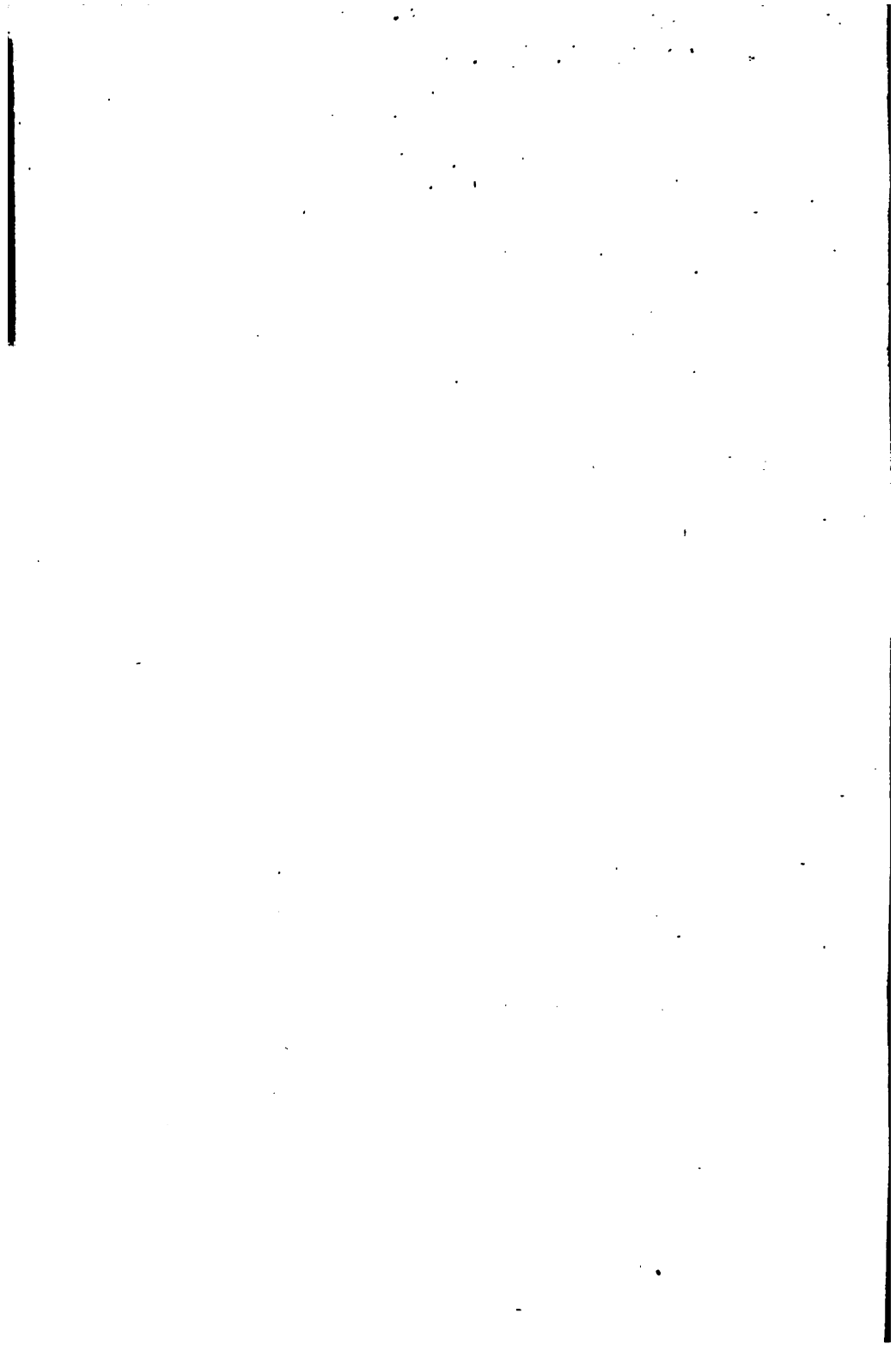


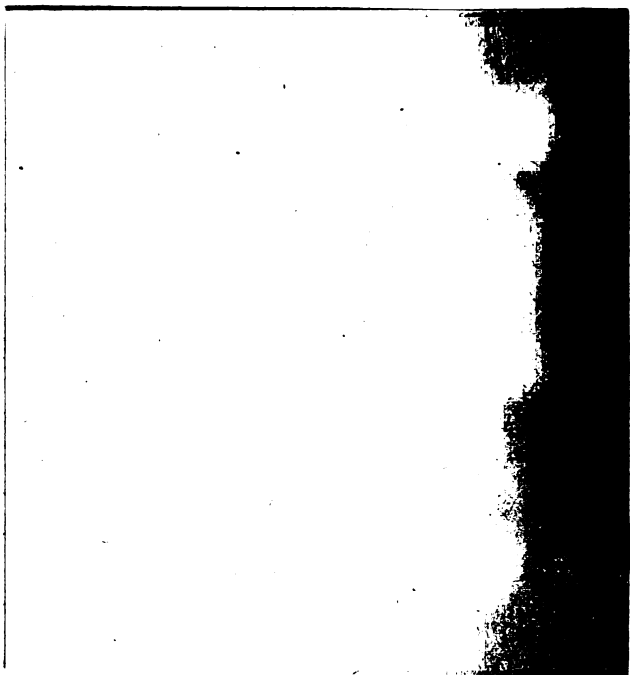












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